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# THE BUILDERS' JOURNAL

## *AND ARCHITECTURAL RECORD*

APPEALING TO THOSE ENGAGED IN

## *THE ART OF BUILDING.*

*IT is our aim, our ambition, our aspiration even, to build our Journal worthily and well, not for the hour only, but for future years; for the few men in the forefront of an enduring and a laborious Art; for the disciplined ranks of a distinguished Profession; for the young men—Architects to be—and for all who love a clustered column or a flying buttress, a traceried window or a Greek frieze; for the man, too, who honestly plumbs a jamb . . . . .*

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# THE
# BUILDERS' JOURNAL
## AND ARCHITECTURAL RECORD.

August 5, 1903. Vol. 18, No. 443. 9, East Harding Street, E.C.

**National Competition Designs.** SOUTH KENSINGTON art is a popular butt for abuse among certain artistic clans. Doubtless there are thousands under its régime who "affect" art as a *gentil* accomplishment; doubtless these same thousands have little more artistic perception than a blind fish in a Kentucky cave, to recall Ruskin; and yet any fair critic who visits the National Competition designs now on exhibition at South Kensington Museum cannot fail to be impressed with the remarkably good trend of the majority of the designs. If some are studiously mediocre, there are scores which exhibit a freshness and individuality that must be very gratifying to everyone with any interest in the artistic welfare of their country; if some are thrown back in mediævalism, if there be too many dismal knights, dyspeptic women and haggard faces, there will be found many beautiful treatments in the spirit of our own day; while, taken as a whole, the colouring is very pleasing and harmonious. Between six and seven hundred designs are exhibited, chosen from 5,733 thought worthy to compete, out of 41,500 sent in. The architectural designs are among the least satisfactory. The examiners (Mr. John Belcher, Mr Reginald Blomfield and Mr. T. G. Jackson) express themselves much disappointed with this work and have rejected a number of rudimentary and incomplete designs which should never have been submitted for the competition; and, further, they regret to notice that in many cases the mistakes made by the students show a want of intelligent instruction in the subject. They are much pleased with the design for an oak reredos and baldachino—an excellent design, well drawn—by Mr. John H. Gibbons, of the Cavendish Street School of Art, Manchester, to whom a silver medal is awarded: so pleased, indeed, that they would probably have awarded the author a gold medal had working details been sent with the general elevation. A book prize has been awarded to Mr. Frank Jones, of Scarborough, for a design for a town mission church and hostel, though the vaulting is not understood and could not be constructed according to the drawing. A few measured drawings are shown which compare well with those of last year, but do not include anything of exceptional merit. Mr. Percy I. Elton, of the Regent Street Polytechnic, receives a silver medal for his drawings of the Hall at Eltham Palace—careful pencil work: Mr. B. A. Poulter, of Reading, is awarded a bronze medal for his set of drawings of "The Forbury," Reading, a very complete set, but altogether too heavy in colouring (the examiners do not commend the use of broken lines in panelling, sashes, &c., and think that a finer line is better adapted for showing detail); Mr. William E. Sands, of Nottingham, secures a book prize for his drawings of a chancel screen at All Saints', Strelley, though the fact is apparent that the mouldings of old work cannot be struck with compasses; while Mr. John D. Forbes, of Inverness, and Mr. C. Corbett, of Carlisle, also secure a book prize each, the former for measured drawings of a steeple and the latter for drawings of a screen at Carlisle Cathedral; in regard to the last, however, the examiners draw attention to the mistake of outlining ornaments with thick black lines. Turning now to branches of design akin to architecture, we find some fairly good examples of furniture, though tainted with eccentricity; the examiners, we are glad to see, make a special note on this matter, strongly deprecating those wild fancies which have no regard for material and possess no logical significance. The design for an overmantel with incised and stained-wood panels (by Miss Gladys M. Baly, of Regent Street Polytechnic) pleases us more than any of the others, and well merits a silver medal. The internal decorations submitted were even more eccentric than some of the furniture designs. The glamour of "L'Art Nouveau" has a strange persistent fascination, but it leads to the slough of despond. The silver medal award is, however, a most admirable design for an ante-chamber to the State apartments of an Egyptian governor, and Mr. Mackinder, of Lincoln, is to be congratulated on the excellence of its technique; it follows on Egyptian lines, though there is much freshness shown in the adaptation of the lotus bud in the delicately-coloured frieze and the scrolls on the ceiling; had there been still a little more originality it would probably have received a gold medal. The stained glass shows an improvement, but the ironwork and wallpaper designs submitted were so inferior that only a book prize has been awarded in each. Tile-work is better, though with the exception of some pottery panels for a music cabinet and wardrobe, by Mr. C. E. E. Connor, of Hanley, nothing of particular moment is exhibited The designs for tile panels and friezes are of a higher standard. A distinct advance is noticeable in the quality of the designs for stencil and lace hangings, printed muslins, &c., and many excellent schemes are exhibited. It is specially worthy of note, too, that in numerous cases the design is shown with the executed work, so that the faults and merits of both can at once be seen: in this respect it is observable that many of the tiles and pottery works are much more pleasing in colour in the design than in the executed article, while in some cases it is apparent that effects shown on paper were clearly inapplicable to the material. The modelling design is certainly inferior. We are glad to note that the examiners emphasize the necessity of giving greater attention to construction, and that more care is needed with the architectural settings, which are flagrantly defective: the examiners suggest, too, that students should submit small-size modelled sketches to explain the position and purpose of the work, while in cases of repeating patterns photographs might with advantage be sent to show the effect of the repeat. Mr. Ernest G. Webb, of Plymouth, is awarded a silver medal for his design for an overdoor, and Mr. Charles W. Sharpe, of Liverpool, a bronze medal for his design for the base of a column, though the figures on the latter should have been modelled on the drum instead of sunk so that they appear to be supporting the column. Altogether the exhibition is a very interesting one, and well worthy of a visit (10 to 6). It was opened by Lord Londonderry on Wednesday, and, by a happy coincidence, the fifteenth annual meeting of the Society of Art Masters was held in the same building on the same day. The president, Mr. C. Stephenson, of Bradford, alluded to the future of schools of art under the new Education Act, observing that whoever held the control of the technical art crafts would control the schools of art. During the coming session most of the latter will come under the direct control of the new local education authorities, composed mainly of successful business men, who, it is hoped, will not fail to insist on training designers directly useful in commercial work. In the large manufacturing centres art masters will have to make themselves acquainted with the various art trades and the men who conduct them, so that they may anticipate their needs, both artistic and technical.

# SUB-CONTRACTING.

## An American "Code of Practice."

ARCHITECTS and builders in this country will be interested to read the following "Code of Practice" for sub-estimating and sub-contracting as adopted by the Master-Builders' Association of the city of Boston, U.S.A. It has now been in force for some years:—

### Article I.

*Obligation of Principal Contractor to Sub-Contractor.*—A principal contractor is under obligation to treat upon an equal basis all estimates which he "receives" prior to putting in his own bid. Estimates must be considered as "received" when they come into a principal contractor's possession, either by his direct solicitation or by being accepted by him. The opening of a bid, knowing it to be such, constitutes receipt of the same.

A principal contractor is under no obligation to use a bid which he has not solicited, accepted or received, but if he does not wish to use the estimate of a sub-bidder he should decline it if proffered personally, or should return it unopened if sent to him by mail or otherwise. The retention of a bid should be construed as a receipt of the same.

A principal contractor, when making up his estimate, is not entitled to receive bids from sub-contractors if he is at the same time making himself their competitor by figuring their portion of the contemplated work. It is legitimate for a principal contractor to figure all portions of work depending upon no one for what are usually known as sub-estimates, but it is not legitimate for him to receive bids from others for sub-work if he is himself figuring those portions independently.

### Article II.

*Award of Sub-Contracts.*—The principal contractor having been awarded a general contract, should immediately award the sub-contracts to the lowest bidder in each branch.

### Article III.

*Penalty for not Awarding Contract to Lowest Sub-Bidder.*—A principal contractor failing to award a sub-contract to the lowest sub-bidder to whom he is under obligation as previously provided, should be liable to pay damages to the said lowest bidder, in amount not less than 10 per cent of the amount of the estimate.

Payment of such damages will not relieve the principal contractor from liability to discipline under provisions of article X. of the by-laws of this Association. . . .

### Article V.

*Payments to Sub-Contractors.*—Unless the contracts made with sub-contractors otherwise provide, payments during the progress of the work should be made by the principal contractor to the sub-contractors upon the same basis of payment, in relation to amount of work performed, as is prescribed in the contract made by the principal contractor with the owner.

Final payment to a sub-contractor should be considered as due at the expiration of thirty days after the completion of his work and its approval by the architect or owner unless otherwise provided by the sub-contract or agreement. . . .

### Article VII.

*Obligation of Sub-Contractor to Principal Contractor.*—Should a sub-contractor refuse to contract at the amount of the estimate he has given to a principal contractor who has used the said estimate in good faith, he then should be liable to the said principal contractor for damages in amount not less than the difference between the amount of the estimate which was submitted by him and the amount at which the principal contractor may be obliged to contract the work.

Payment of such damages will not relieve the sub-contractor from liability to discipline under provisions of article X. of the by-laws of this Association. . . .

### Article X.

*Bids to Architects or Owners.*—When bids for separate departments of work on a building are solicited by the architect or the owner, they should be submitted with the understanding that they are direct estimates, for which direct contracts are to be made by the owner with the lowest bidder, and no other disposition of such bids should be permitted without consent of the bidder submitting the same.

Sub-bids should be given only to the principal contractors who are estimating the work in question, and should not be left with architects or owners for the inspection and information of principal contractors. Sub-contractors must understand that bids thus left with architects or owners are in great danger of losing their confidential character, and that if they so leave them they cannot claim protection or redress under the first article of this code.

### Suggestions.

Members of this Association having sub-contracts to let or material to buy should, as far as may be consistent with business principles, deal only with members of the Association, or at all events give their fellow members an opportunity to compete, and then give them the preference, other things being equal.

All bidders should take cognizance of the danger they may be subjected to through the practice so prevalent in some architects' offices of making changes in plans or specifications, or in both, during the progress of estimating. Correction of this pernicious practice can only be obtained through refusal by contractors to estimate under such conditions.

# BRICKLAYING IN WINTER.

## An Instructive Report from Stockholm.

IN the course of a report to the Foreign Office the British consul at Stockholm (Mr. Stewart MacGregor) makes some interesting statements as to bricklaying in winter. He says:—

In winter-time one hears much about the want of employment for bricklayers and others in the United Kingdom on account of frosty weather. Yet anyone residing in Stockholm during the winter months can see bricklaying carried on in hard frost as an everyday occurrence. This, from a British point of view, is so unusual and important that I have endeavoured to obtain full particulars as to how it is done, hoping that these details may perhaps be useful at home. I have to thank Mr. P. Graham, a fellow countryman long resident in Sweden, for the following account of the system here adopted, and will just add that the art of building stands very high in Stockholm, much of the work done being both ornamental and of excellent quality.

A few years ago a series of experiments were carried out here with a view to deciding the lowest temperature at which bricklaying might safely be carried on. Three different temperatures were decided on, namely: first, 23 degs. Fahr.; second, 14 degs. Fahr.; third, 6 degs. Fahr. The bricks and mortar were, as to quality and conditions, such as are commonly used here. The walls thus erected during winter were allowed to stand till the following autumn, when they were torn down and the following results noted:—Nos. 1 and 2. Perfectly satisfactory. The mortar was quite hard and sound, and had to be scraped from the bricks. No. 3. Unsatisfactory. The mortar did not adhere at all to the bricks, which lay loosely embedded in it. These results tend to prove that, without any special precaution as to material or labour, bricklaying can be carried on in Stockholm at a temperature as low as 14 degs. Fahr.

For lower temperatures it is necessary to heat the sand and water used in making the mortar, and for this purpose very simple apparatus is employed. First, for the boiling of the water, all kinds of contrivances are to be seen in use, including primitive as well as modern boilers. Second, for heating the sand, the common arrangement consists of a circular iron tube 18in. to 24in. in diameter and 6ft. to 8ft. long. This is closed at one end with bricks or an iron plate. On the top at this end there is a chimney 8ft. to 10ft. high and 5in. to 6in. in diameter. The fuel, which is generally refuse wood from the building under erection, is fed in at the open, or partly open, end of the cylinder. This cylinder is often formed of an old boiler tube or a piece of an old iron chimney, &c. For burning coal special grate and chimney arrangements would be necessary, but in no case need they be elaborate or expensive. After placing the cylinder on the ground the sand is heaped on and around it to a depth of 18in. to 24in., and allowed to remain until it gets hot, when it is taken away from where it is hottest and replaced by fresh sand. The mortar should be made in a room where the temperature is kept well above freezing. This temperature should naturally be regulated according to the frost that has to be counteracted. Generally, the builders here make a room of this kind by roughly boarding in a part of the scaffolding, simplicity and cheapness being the prominent characteristics of all the arrangements.

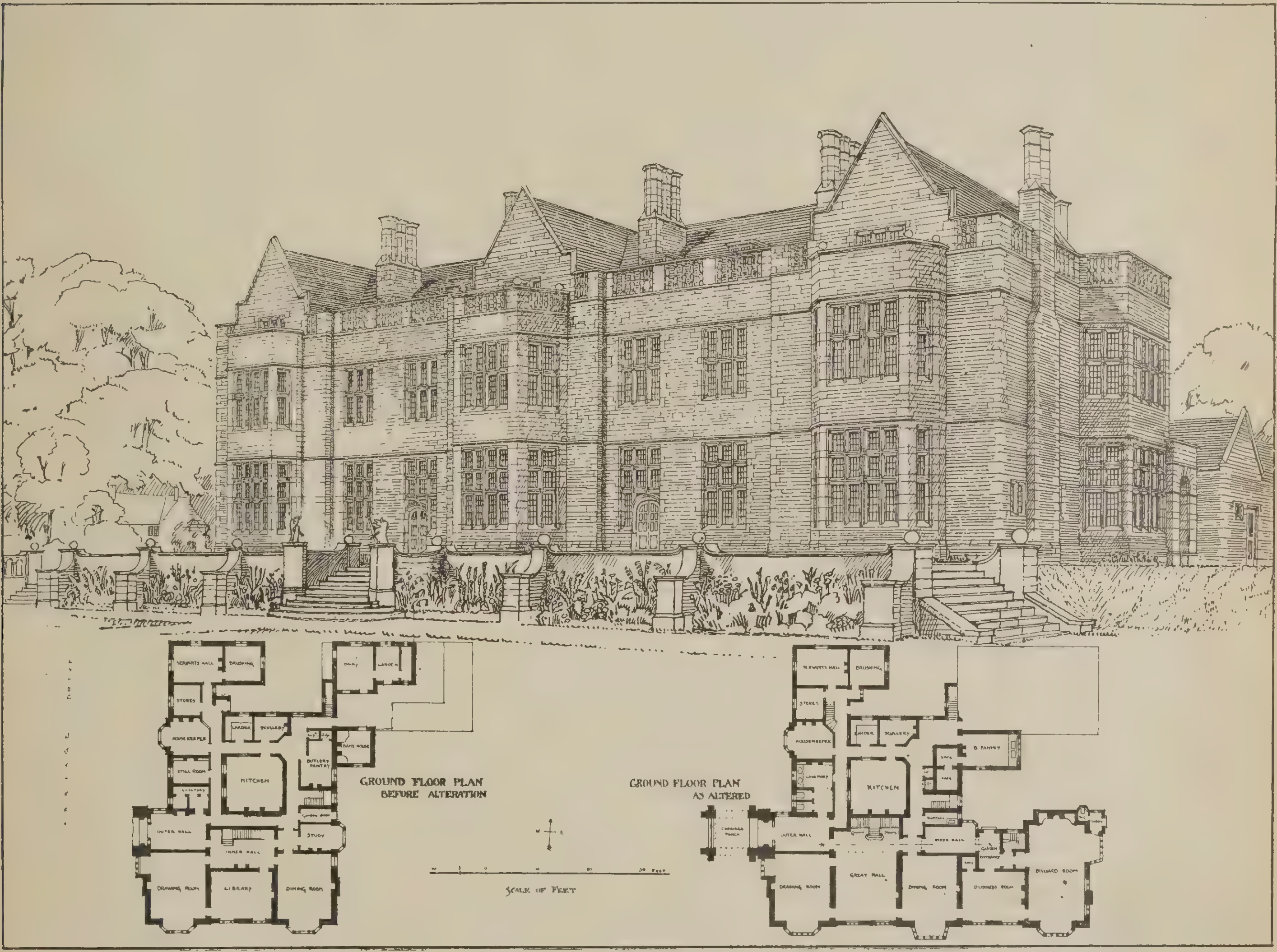
When building in frosty weather the following precautions should be observed:—(1) In laying the bricks care should be taken to avoid shifting them after they have once been set in the mortar. (2) Never use old or stale mortar, but arrange supply to correspond with demand. (3) It should be understood that the brick used here is of a light or porous character, which readily absorbs the moisture from the mortar. Hard pressed or calcined bricks and stonework generally are not suitable for building during frosty weather, but edgings or ornaments, &c., of such material can easily be dealt with by slightly warming them before bringing them into position. This can be done by keeping them a few days in a wooden shed heated by an open coke stove. In some cases it is found advisable to cover in with rough boarding the part of the wall where such stonework is extensive. In such cases a very small coke fire is found sufficient to keep the temperature high enough to prevent any damage to the mortar. (4) Although brick building can thus be carried on safely under any of the temperatures already named, this does not apply to plaster or cement work, which should not be done at or below freezing point unless proper heating arrangements are made.

Whereas in Stockholm fifteen or twenty years ago almost all building was suspended during four to five months every winter, it is now the exception that such operations are hindered by frost more than a few days or a few weeks annually, and this though there is much more stone and ornamental work in the buildings now being erected than in those of an earlier period. What twenty years ago was considered practically impossible has now become everyday practice. To sum up shortly: (1) The bricks should be porous and perfectly dry, so that they may readily absorb the moisture in the mortar. (2) The water, sand and bricks must all be heated.

Builders and contractors will doubtless note these facts with interest and remember them when winter comes again; so that building work may be continued.

# THE SLATE INDUSTRY OF LAKELAND.

PERHAPS the most thriving industry in Lakeland to-day is that of quarrying the excellent green slates for which the district is so famous. The last twelve or fifteen years have seen an extraordinary revival of this industry. Old quarries that remained unworked for many years are now in full blast. The development has given employment to five men where formerly but three were employed. Without taking into account the Burlington quarries, considerably more than 500 men are working in the slate quarries strictly in the limits of the Lake District. The majority of these are at work in Elterwater, the Tilberthwaite Valley and at Coniston. The great demand for the Silurian green slate of this district is only equalled by the prices charged for them. It is the high prices that prevail that keep some of the poorer quarries going. And for the present a fall in prices is not likely to occur; nor can these slates be raised at the prices which obtained some years ago, owing, not only to the higher rate of wages, but to other factors which make the working of the quarries more costly than formerly. In most of the older quarries—especially those situated in the valleys—the veins that could be worked from a level floor are now worked out, and the slate has to be sunk for. This necessitates the use of haulage gear, which of course adds considerably to the cost of production. The modest hand-winch of former years has now been replaced by more powerful and up-to-date machinery. In the Tilberthwaite valley alone there are in use—steam cranes, turbines, steam pumps and oil engines, with their patent hauling gear, besides water-balances and other ingenious contrivances in the neighbouring quarries. For freshness of colour, tone and durability the Silurian slates of the Lake District have no serious rivals. The stupendous industries of Wales or the growing imports from the "States" do not seriously touch the trade of this district. The best slates of Lakeland—the pure sea-green—only find their way on to the best buildings. Some of our royal palaces and many town halls and public buildings are roofed with the products of Honister, Elterwater, Tilberthwaite and Coniston. Where it was difficult to get £4 10s. per ton, at one time, it is quite easy to get £6 now for the best class of slates; and even £7 10s. has been given for really choice material. It has been the tendency of late years for quarries to combine or to form into larger groups, and on the whole this has been satisfactory enough. The Buttermere Green Slate Co., Keswick, not satisfied with their extensive workings in Honister Crag and Yew Crags, acquired the Parrock Quarry (Tilberthwaite) and the original Green Slate, Elterwater. By both these acquisitions the neighbourhood has greatly benefited, for at Parrock only a few men were employed, whereas the Elterwater quarry was not working at all. Now there are times when the two quarries employ nearly 100 men and boys between them. The colour of the slate at Elterwater is, in the main, of a light green, sometimes defined as a sea green; while at the Parrock they take on a dark green or deep olive; this is very similar in colour to some of the Honister quarries, and finds a ready market. The Buttermere Co. have driven miles of levels (metaphorically), and to-day they are prospecting on Lingmoor, with what results time will show. Other new ventures are in the wind. The Parrock quarry produces some of the thinnest slates in the district, and cannot be surpassed even by the productions of the Honister quarries. The other important company at Elterwater—the Elterwater Green Slate Co.—work the Lord's and some of the Lingmoor quarries. This company is not limited to the production of slate alone. They run a couple of frame saws, driven by oil engines, by which the stone is cut into shape for monumental and other purposes. The rock at the Lord's quarry is of a light green and lends itself admirably for monumental purposes. The two leading quarries at Elterwater, together with a couple of small private firms, employ about 100 men; and the annual output of slate ranges from 2,200 to 2,700 tons, besides a large quantity of dressed and undressed stone.



REBUILDING OF GUISBOROUGH HALL, YORKSHIRE, FOR COL. R. CHALONER. A. C. MARTIN, ARCHITECT. (*See p* 13.)

Coming over to the other valley, we find a complete hive of industry. The Tilberthwaite Green Slate Co. is responsible for most of the work done here. Besides the Hodge Close, Moss Rigg and Klondyke, this company works several smaller quarries. They have, like the Buttermere Co., both the light and dark greens. The Hodge Close and Moss Rigg quarries approach in size some of the Welsh quarries. The annual quota of slate sent from the Tilberthwaite valley must total something over 4,000 tons;

in the near future they may send away an even greater quantity. At Coniston the slate industry seems to have taken a new lease of life. Not only has a new company been formed to work the Old Man and Addiscale properties, but the other companies are correspondingly progressive. Already some of the Old Man quarries are promising well, and it is more than likely that the next five years will see a big development there. Then there are workings at Broughton Moor, Walna Scar and Ulpha, and slate raised at these quarries is greedily bought up. There are also private undertakings scattered up and down the district—in Patterdale, Troutbeck, the Langdales and other localities; but the bulk of the slate is produced by the companies that have been named. In the general rise of the industry the workman comes in for a share of the increased prosperity. There is work to be done which only long practice and great experience will enable a man to do, and the men who are masters of quarry craft in all branches command good wages.—(From the "Westmorland Gazette.")

# THE PRESERVATION OF ANCIENT BUILDINGS.

### Provisions made by the European Governments.

WHILE referring to Clifford's Inn a writer in the "Burlington Magazine" takes occasion to remind us of the provisions made in other countries for the preservation of ancient buildings. He recalls the fact that Great Britain shares with Russia and Turkey the odious peculiarity of being without legislation of any kind for the protection of ancient buildings and other works of art, such as is possessed to some degree by every other country in Europe and by almost every State of the American Union: after which he summarises the facts given in a Parliamentary paper presented to the House of Commons on July 30th, 1897.*

### In Austria

there has existed for many years a permanent "Imperial and Royal Commission for the Investigation and Preservation of Artistic and Historical Monuments." This Commission had, in 1897, direct rights only over monuments belonging to the State (in which churches are included); but it acted in concert with municipalities and learned societies, and promoted the formation of local societies to carry out its objects. No ancient monument coming within its scope can be touched without the sanction of the Commission. Since 1897 its powers have, we believe, been extended. Not only buildings, but objects of art and handicraft of every kind, as well as manuscripts and archives of any date up to the end of the eighteenth century, come within the scope of activity of the Commission, which is a consultative body advising the Minister of Public Worship and Education, who is the executive authority for these purposes.

### In Bavaria

alterations to all monuments or buildings of historical or artistic importance (including churches) belonging to the State, municipality or any endowed institution have, since 1872, required the sanction of the Sovereign, who is advised by the Royal Commissioners of Public Buildings. The ecclesiastical authorities and even religious communities are prohibited from altering a church or dealing with its furniture without the consent of the Commissioners.

### In Denmark

there has been a Royal Commission with similar objects since 1807; ancient monuments are scheduled, and since 1873 the Royal Commission has had power to acquire them compulsorily if their owners will not take proper measures for their preservation.

### In France

the Minister of Public Instruction and Fine Arts, who is advised by a Commission for Historical Monuments, has as drastic powers as the Danish Royal Commission. About 1,700 churches, castles and other buildings (including buildings in private ownership) have been scheduled and classified, and cannot be destroyed, restored, repaired or altered except with the approval of the Minister, who has power to expropriate private owners under certain circumstances.

### Belgium

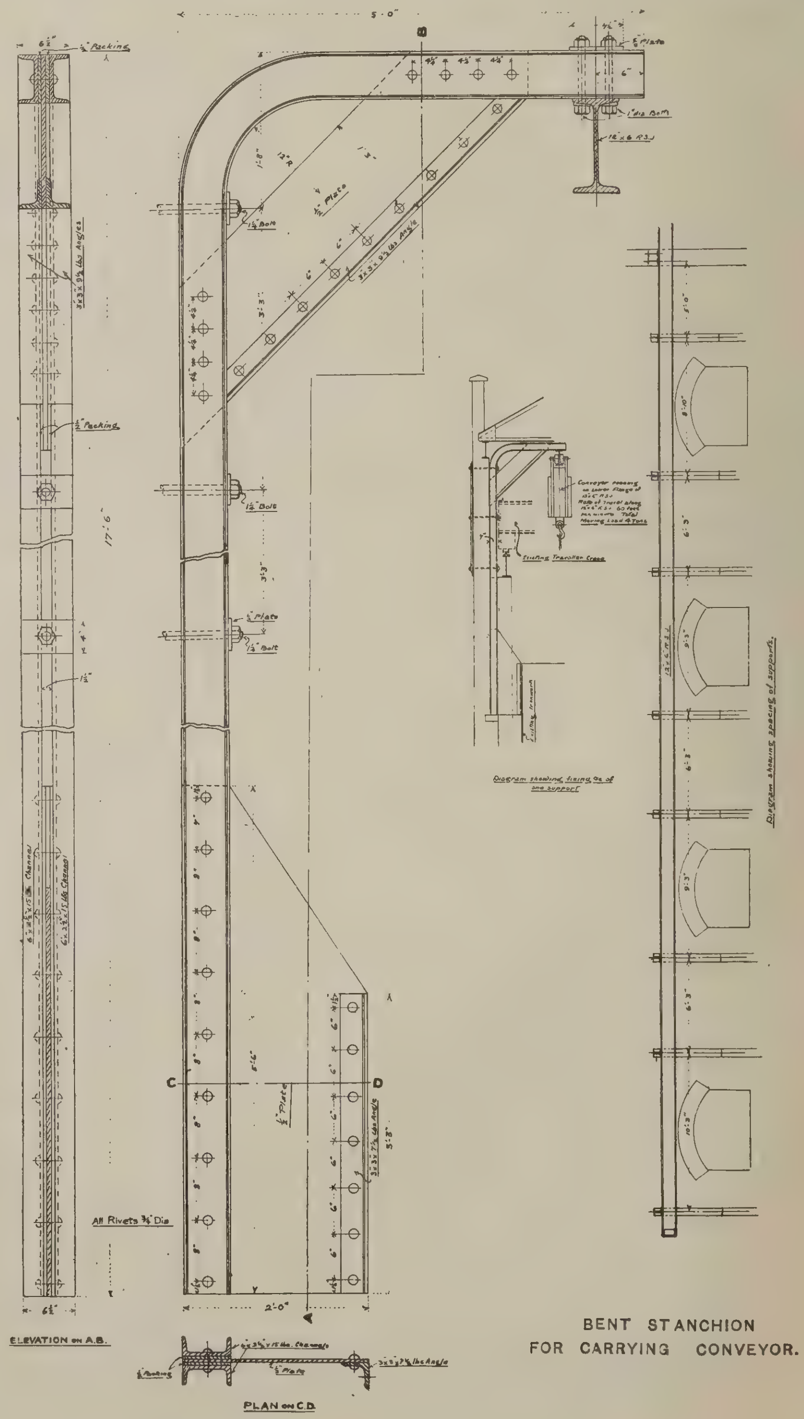
has statutory provisions of a similar character. There a Royal Commission on Monuments was constituted so long ago as 1835, so that Belgium is second only to Denmark in this matter. The Commission may schedule any building or ancient monument, and the scheduled building cannot be touched without the consent of the Commission, even if it is in private ownership. In Belgium, as in France and Denmark, grants of public money are given for the purchase and preservation of ancient monuments, and the Belgian municipalities are very zealous in the same direction. In Bruges, we understand, the façades of all the houses belong to the municipality, so that their preservation is secured and also congruity in the case of new buildings. No object of art may legally be alienated or removed from a Belgian church; this law, however, is unfortunately still evaded to some extent.

### In Italy

several laws have been passed, beginning with an edict of Cardinal Pacca for the old Papal States in 1820. The Minister of Public Instruction may, by a decree, declare any building a national monument, and the municipalities have large powers: works of art, as is well known, cannot legally be taken out of Italy, but this law is often evaded.

### In Greece

the powers of the State are perhaps more drastic than anywhere else. Even antique works of art in private collections are



BENT STANCHION FOR CARRYING CONVEYOR.

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* "Reports from Her Majesty's representatives abroad as to the Statutory Provisions existing in Foreign Countries for the Preservation of Historical Buildings." Miscellaneous, No. 2 (1897).

considered as national property in a sense, and their owner can be punished for injuring them; if the owner of an ancient building attempts to demolish it or refuses to keep it in repair, the State may expropriate him.

**Holland, Prussia, Saxony, Spain, Sweden and Norway, Switzerland and many American States**

have provisions of a more or less stringent character with the same purpose. But we need not now go further into details. The whole of the facts will be found in the Parliamentary paper, and we have given enough of them to show how far behind every other civilized country England is in this matter. The protection of monuments of the past which Denmark has had for nearly a century and Belgium for nearly seventy years we have not yet thought of. Surely the time has come to wipe out this reproach; until it is wiped out let us have done with the hypocritical claim that we are an artistic people.

## Enquiries Answered.

*The services of a large staff of experts are at the disposal of readers who require information on architectural, constructional or legal matters. Questions should in all cases be addressed to the Editor. The querist's name and address must always be given, not necessarily for publication.*

### Bent Stanchions for Carrying Conveyor.

LONDON, S.E.—R. J. writes: "Are the supports shown on the enclosed illustration satisfactory? (see opposite page)."

The 12 × 6 joist forming the support for the conveyor has a maximum span of 10ft. 3in., while the load is only 4 tons on the centre, or 8 tons distributed. A 12 × 6 × 44lbs. R.S.J. will carry 25 tons distributed over 10ft. 3in. span, so that a much lighter joist would answer the purpose. The weakest point seems to be the top bolt, and if that fails by breaking through at the commencement of the thread, or by pulling the wall in, the stress is brought on the channels at the next bolt. The top bolt might be made 1½in. and the outside wall-plate extended 12in. higher. There is no remark to make on the other parts. HENRY ADAMS.

### Kew Palace: The Leathersellers' Hall.

LONDON, W.—REX writes: "Please refer me to an account of Kew Palace and the Leathersellers' Hall."

A book entitled "Plans, Elevations, Sections and Perspective Views of the Gardens and Buildings at Kew in Surrey," by Sir William Chambers, was published in 1763. It is a rare book, but can be consulted at the R.I.B.A. Library. An account of the Leathersellers' Hall is to be found in "London Past and Present," by Messrs. Wheatley & Cunningham. M.

### Buildings to Sketch around Reading.

LONDON, N.E.—STUDENT writes: "(1) Kindly name some buildings in and around Reading worth sketching. (2) On which side of tracing cloth should the colour be laid?"

(1) Reading Abbey, Berkshire, was founded by Henry the First. The ruins which remain consist chiefly of enormous masses of rubble and flint walls, the whole of the ashlar masonry having been stripped off. It is well worth a visit on account of its very interesting plan. Entry is free. At Bradford College there is an open-air theatre, built by the present headmaster on the lines of the ancient Greek theatres. At Shylake, Oxfordshire, there is a good example of Decorated work in a font dated 1320.

(2) It is a matter of choice. Colour on the opposite side to the ink. G. A. T. M.

### Architecture and Building Construction.

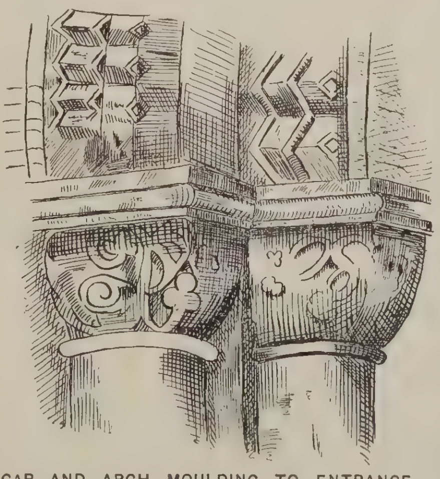
LONDON, S.E.—F. M. writes: "Kindly mention a cheap book dealing with architecture and building construction on a small scale—one from which a practical knowledge can be obtained."

"Specification, No. 6"; Banister Fletcher's "History of Architecture" and Allen's "Building Construction (7s. 6d.): also Rivington's "Building Construction."

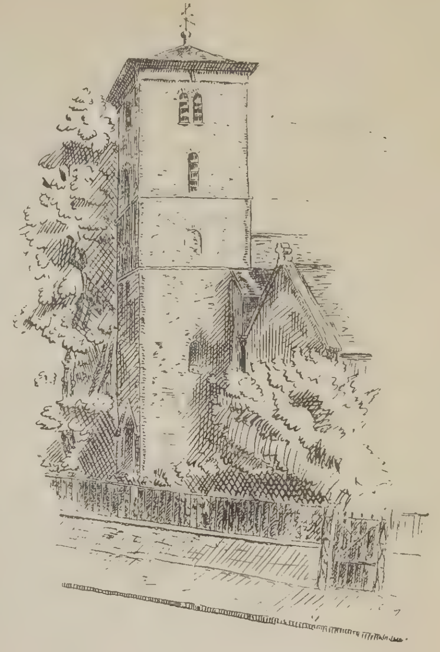
### Buildings between Ipswich and Chelmsford.

BRENTWOOD.—STUDENT SKETCHER writes: "Please name an example of each of the following: Saxon, Norman, Early English, Decorated, Perpendicular, Jacobean and Renaissance architecture within walking distance of the G.E.R. Colchester main line stations between Ipswich and Chelmsford. Examples from the villages, where there is more seclusion and which could therefore be sketched and studied during the day without interference, would be acceptable."

The tower of Holy Trinity Church, Colchester, is one of the best-known examples of Saxon work in the country. Its principal feature is a triangular-headed door of Roman bricks, collected from the remains of the earlier Roman settlement. Copford Church is also Saxon, and contains wonderful mural paintings. Dedham Church, about 3 miles from Manningtree, is Norman, and so are St. Botolph's Priory at Colchester (very quiet for sketching) and Colchester Castle, this latter having been the largest of the Norman rectangular keeps; it contains a museum of antiquities, mostly Roman, of considerable interest, including some remarkably fine specimens of Roman mosaic pavement. Braintree Church is mentioned by Rickman as being Early English, but I do not know it personally; and of Decorated work I know none in the district except the chancel of All Saints', Colchester. Most of the churches are Perpendicular, including all the old Colchester churches and a good example at Ardleigh, while that of Layer Marney is one of the best. This is a little place worth visiting for the sake of Layer Marney Towers, originally the gate-house to a large hall, an elaborate specimen of the Tudor period in terra-cotta, greatly resembling the work in France of the same date, the François I. period. The old houses at Ipswich would be the nearest approach to Jacobean work that could be found, and certainly ought not to be missed; but I cannot remember anything which I could recommend for study as an example of the English Renaissance, except it be Mr. Belcher's recently finished town hall at Colchester. G. A. T. M.



CAP AND ARCH MOULDING TO ENTRANCE DOORWAY, ST. BOTOLPH'S PRIORY, COLCHESTER.



TRINITY CHURCH, COLCHESTER.

### Rough-Cast.

BROMLEY.—R. J. H. writes: "Is there any method of colouring or mixing rough-cast which will make the colour permanent?"

See a reply to an enquiry on this subject on p. 440 of our issue for January 9th, 1901.

### Determining Horse-Power of Stream.

NEWPORT.—ALPHA writes: "How can I ascertain the horse-power of a stream of 34ft. sectional area and a velocity of 24ft. per minute; also of the same stream after dropping perpendicularly for 8ft.?"

The questions are not put in a practical form. (*a*) A stream of water moving at a definite velocity has a calculable kinetic energy: horse-power is a rate of work. If we consider a definite point on the bank of the stream in the question, 24 × 34 × 62·5 = 51,000lb. of water passing that point per minute, and kinetic energy in ft.-lb. being $\frac{mv^2}{2g}$, we have $\frac{51{,}000\left(\frac{24}{60}\right)^2}{2g}$ ft. lb. per min. = 126·7. The horse-power is this quantity divided by 33,000. It amounts, if my arithmetic is correct, to about $\frac{1}{20}$ of a horse-power; but very much less than this could be obtained from it. (*b*) The second question again is not a practical one. When the water has dropped 8ft. its energy has been expended in splashing and commotion. The practical way of dealing with the question of the power available on a stream is to first know the *quantity per minute available*; the weight of this quantity in lbs., multiplied by the height of the fall and divided by 33,000, will give the total or gross horse-power of the stream at the place considered: but you can by no means *get* this horse-power, because there is always some power consumed in any kind of water-engine (water-wheel, turbine, &c.). The fraction of the gross horse-power delivered as power by the water-engine is the efficiency of the engine; with a good turbine an efficiency of $\frac{3}{4}$ or 75 per cent. may be counted upon. The height of the fall is the difference of level between the surface of the tail water and the surface of the head water: 24ft. per min. (of *a*) is no more than it is necessary to give to bring the water in a head-race to a water-wheel, and we may suppose the same velocity in the tail-race below the wheel. If the surface of the head-race is 8ft. higher than that of the tail-race there is $\frac{51{,}000 \times 8}{33{,}000} \times \frac{3}{4}$ available horse-power: somewhere between 9 and 10 horse-power. P.

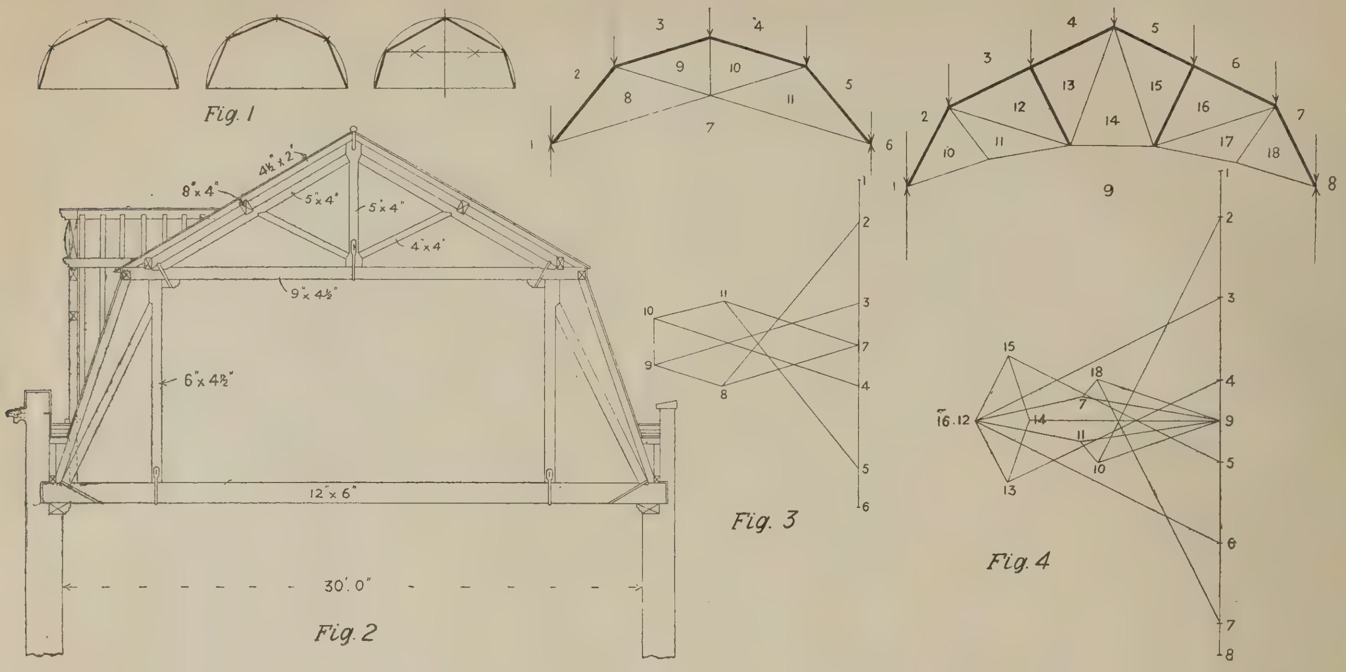


Fig. 1

Fig. 2

Fig. 3

Fig. 4

THE CONSTRUCTION OF MANSARD ROOFS IN WOOD AND IRON.

### Construction of Mansard Roofs.

BEESTON.—A. E. N. writes: "Is there any book dealing with the construction of Mansard roofs?"

There is no book dealing exclusively with Mansard trusses. Referring to the accompanying sketches, Fig. 1 shows different methods of determining the outline, Fig. 2 shows an ordinary timber truss for Mansard roof, and Figs. 3 and 4 show iron Mansard trusses with their corresponding stress diagrams. Most of the text-books on building construction give a Mansard truss in wood, but not many of them deal with the same thing in iron, although the interior arrangement is so very different.

HENRY ADAMS.

### Details of Iron Roof-Truss.

LONDON, S.W.—A. E. B. writes: "After working out the stress diagram for an iron roof-truss as shown by the accompanying sketch (not reproduced), I find that on the strut A there is a stress of 6 tons, on the principal B a stress of 8 tons, on C 4½ tons, D 4 tons and E 3½ tons. Kindly inform me how to calculate the sectional sizes of the T's, L's, and flats required. Also, assuming that there will be two plates at the joint X, how to calculate the number of rivets required to each bar to resist the various stresses to which they are subjected."

These stresses are so extraordinary that I think you must have made some gross mistake. With a pitch of 30 degs. and a rise of 6in. in D, at a distance of 8½ft. from the point of support, a stress in the rafter of 8 tons will give a stress in the tie of 7 tons, not 8 tons as stated by you. Supposing the loading to be vertical, these stresses would give such an extraordinary shape to the truss, with any conceivable mode of loading, that unless it is for some unusual position you are mistaken; while, if it is for any such unusual position and purpose, you should give the shape of the centre lines of the truss properly drawn to scale, and the loading. I may say, however, that in trusses for small spans economy of labour is of more importance than economy of material. For practical purposes, and especially for small trusses, the resistance of wrought-iron or steel to compression, to tension and to shearing may be taken as equal, and the safe load may be as 3 to 4 tons per sq. in. When two plates are lapped and riveted, the total section of the rivets should at least equal the sectional area of a plate across the rivet holes (less the holes themselves). If a plate is riveted with one rivet between two plates, for a pull on the middle plate there is a shearing value of twice the area of the cross-section of the rivet. The stresses should come on the members as nearly as possible through their centre lines. P.

### Architects and Surveyors in the Royal Engineers.

WORKINGTON.—QUÆRO writes: "What salaries do architects and surveyors in the Royal Engineers receive, and what are their prospects?"

You can obtain full particulars from the Secretary, Civil Service Commissioners, 68, Victoria Street, S.W.

### Bankruptcy of Builder and Liability of Architect.

GLAMORGAN.—INQUISITIVE writes: "The architect of twenty houses which are being erected for a building club, and on whose certificate the contract moneys are advanced to the builder, certified for more than was due to the builder, and the moneys were paid in accordance with the certificates. The builder has since become a bankrupt, and it is feared that the retention moneys will not be sufficient to complete the works. The architect's remuneration is payable to him in instalments, and he has, as yet, only received a portion of such remuneration, but has applied for payment of the balance. The club hold him responsible for the amount wrongly certified by him, and wish to withhold his remuneration in part satisfaction of this amount. Is the architect liable in damages for neglect, and if so, can his remuneration be applied in part satisfaction of such damages?"

The case is somewhat doubtful, but we are inclined to think the architect is liable for part of the amount. It is a difficult point to decide how much to grant certificates for, because where a builder takes a job at a very low price he may do a large amount of the work before he is entitled to even a small draw, as no other builder would take the job at the same price. He, of course, claims that he shall be paid a proportion of the contract sum equal to the proportion of the job done, and we are not sure that he could not demand it if the contract is made on the ordinary terms as to draws; in this case the architect would not be liable for granting proportionate certificates, as the client should have had a guarantee before accepting the tender of the contractor's financial standing and ability to complete the contract. Most conditions of contract are far too loosely drawn up in regard to this question.

### Half-Timbered Work: Buildings in Somerset.

BRISTOL.—STUDENT writes: "(1) Next to oak, which is the most durable wood to use in a half-timbered house? (2) Kindly name some buildings to measure in Somerset, other than Bath, Taunton and Glastonbury."

(1) Spruce, Dantzic red pine or pitch pine may be used—they are all sufficiently durable; but if a pine is used it should be a resinous one. (2) Sherborne Parish Church; St. Mary Redcliffe Parish Church, Bristol; Clevedon Court, a fine fourteenth-century manor-house; Barrington Court (sixteenth century) and Montacute House (seventeenth century) are other fine manor-houses. Wells has much of interest besides the cathedral. But there is so much of interest all over Dorset that we advise you to consult any county history or guide, as we have not the space to deal with the matter fully here.

### Entering a Building Firm.

LIVERPOOL.—NERVOUS writes: "What precautions would it be advisable for me to take in order to ascertain the financial condition of a firm of builders and contractors which I propose to enter as a junior partner? What do you consider a fair return to expect with £500 capital and services?"

We should advise you to enter a country builder's business for about six months with a view to partnership. You will then be able to judge of the value of the business and its prospects. You should, before entering into any agreement, ask to see all the books and get a banker's reference, and ask the builder to give other references as to his character. We consider a country business the best, as it is not so speculative as one in a large town. If you invest £500 you ought to have a share in the business and no fixed salary, but the amount of share depends upon the other capital. You ought, however, if you invest £500 and give your services, to make a profit of about £250.

## BRINKWORTH CHURCH.

THE old church of Brinkworth, near Chippenham, has recently been restored at a cost of £2,550. The church is dedicated to St. Michael. It consists of a chancel (which was entirely rebuilt in 1889), a nave of five bays, without clearstory, with north and south aisles, south porch and western tower, the greater part of which was built during the fifteenth century. There is evidence of a much earlier church in the stem of an eleventh-century cross found in excavating for underpinning the foundations of the porch, and of still earlier interments in the same position in coffins cut out of solid blocks of oak, and laid north and south. There were several of these. The earliest part of the present building is the west end of the nave with the archway into the tower, which is of fourteenth-century date, and belonged to a church no other part of which remains. The arch is not central with the present nave, but the mould on the tower wall shows that the earlier nave followed the lines occupied by the present one, but with a lower roof, and there was probably no north aisle. The tower was the first part to be rebuilt, early in the fifteenth century, and the nave, aisles and porch within fifty years after this. The proportions of the whole building, other than the chancel, are lofty and magnificent for a village church. The arcades between nave and aisles are supported on tall octagonal pillars and are carried up to the plate of the roof; the windows are large and rich, with great uniformity of design, and the old roofs (all of which remain) are well moulded and enriched by carving at the intersections. The stair to the rood loft opens out from the north aisle and is complete with the exception of the roof, which has been lowered at some time. There are two squints giving a view of the chancel from the aisles, and an ambry near the east end of the north aisle proves the former existence of an altar there. The church must have been rich in frescoes, and valuable traces can still be seen; there are remains of painted decoration of chevron design on the mouldings of the arches and windows. There is a fine oak gallery of Queen Anne type at the west end. The font is a fourteenth-century one, with a seventeenth-century cover. The oak altar is very richly carved. In 1896 the body of the church was in a sad state of disorder and decay. The pillars were leaning outwards to a dangerous extent, the roofs had so long admitted the rain that the timbers were rotted off at the ends, the porch was coming away from the rest of the building, the pavements worked into holes and the wood floors in a state of decay; the walls of the tower had been cut away in places for half their thickness to give more room for the bells, the only means of warming the church was by two stoves placed in the passage without any provision of a chimney to either, so that all the fumes were retained within the church; the pews were high boxes, mostly of deal; while, as a culminating point, in the east side of the font had been inserted a beer-tap. By careful and judicious repair and re-fitting the church has, once more, been rendered more worthy of its purpose. The leaning pillars have been set upright where their angle was a source of weakness; the foundations at faulty points underpinned; the roofs stripped, thoroughly repaired and recovered with the old lead and tiles; the plaster ceiling removed to expose the moulded timbers previously hidden; the walls and stonework generally repaired; the windows re leaded and every bit of the former glass retained; the floors concreted and paved—the passages with the old stones where fit, and the rest with wood blocks; the whitewash removed by a careful peeling process so as not to destroy the frescoes which have, on the contrary, been thus brought to light to a great extent; the gallery repaired and the space beneath enclosed by oak screens to form a baptistery; the new Musgrave stoves set up with chimneys; new oak tie-beams inserted to secure the walls and roof; new oak doors on the west and south; the nave, aisles and gallery seated in oak, and a new oak lectern added. The old pulpit with its sounding board has been retained intact, new floors put in the tower, and the bells rehung (without the multilation frequently made by cutting off the canons) and their compass in ringing so reduced as to allow the walls of the tower to be restored to their original condition. A spiral staircase of oak has been put for access to the ringers' loft, and the lower stage of the tower used as a vestry and fitted with cupboards, &c., made of what there was of oak in the old pews. Around the outside the ground has been lowered and a surface channel formed, with excellent results as regards the dryness of the interior. The churchyard paths have been repaired and the walls made good, and a picturesque shed erected for fuel and for cleaning the copper and iron lamps used for lighting the church. The works have been carried out by Mr. Kite, builder, of Salisbury, under the supervision of the architect, Mr. C. E. Ponting, of Marlborough.

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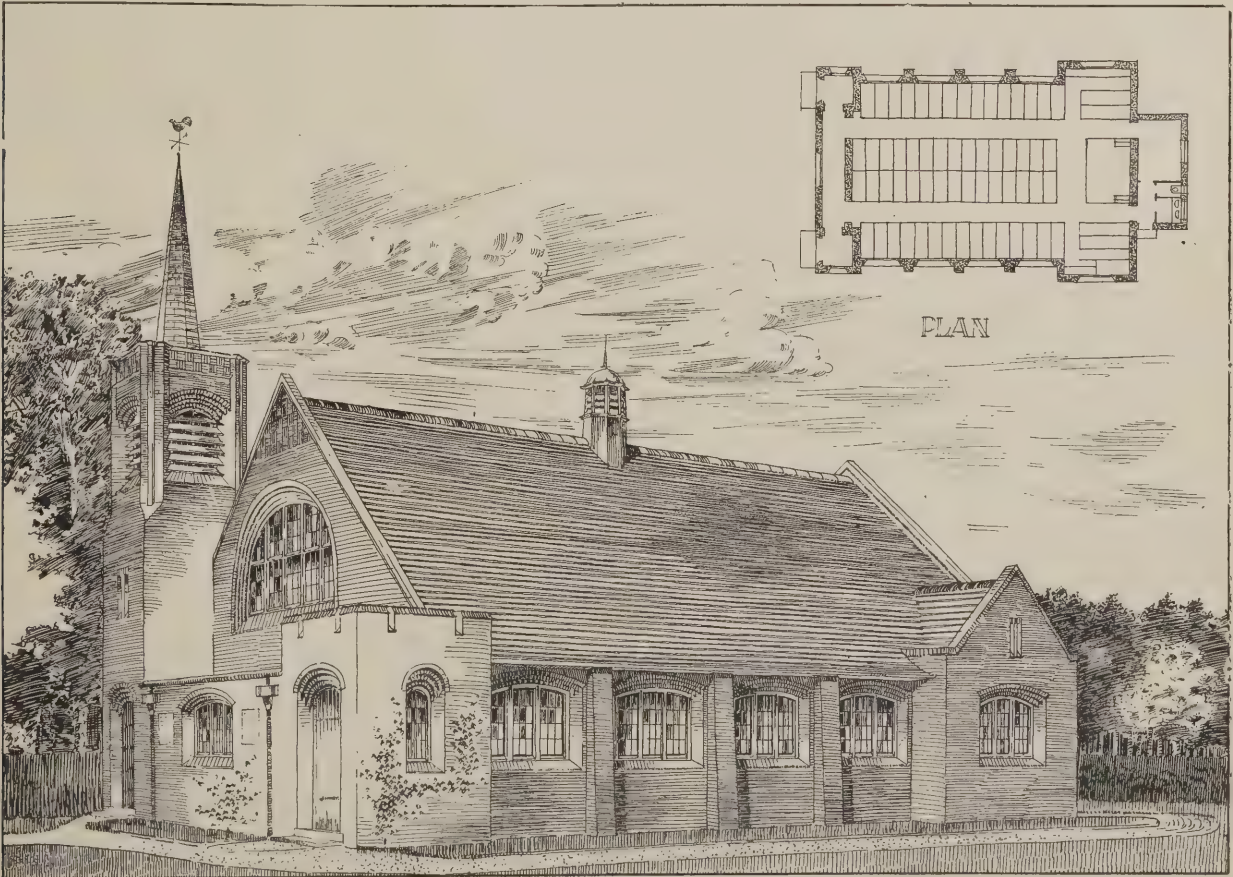
**New Congregational Church, Whittlesford, Cambs.**—This church is being erected to replace the present inadequate building. The site is on the main Cambridge road, and has a frontage of 70ft. with a depth of 160ft. The building has been designed to accommodate 300 worshippers, and has an extreme width of 41ft. 6in. with an extreme length of 74ft. 6in. Behind the church are provided vestry, stores, boiler-house, &c. The materials externally are red brick and hand-made tiles. The spire is to be covered with oak shingles. Heating will be by hot water. The architect is Mr. Henry S. Jardine, A.R.I B.A., of London, and the contractor Mr. J. Custerson, of Saffron Walden, Essex. The cost of the building will be about £1,300.



NEW CONGREGATIONAL CHURCH, WHITTLESFORD, CAMBS. HENRY S. JARDINE, A.R.I.B.A., ARCHITECT.

# MODERN LONDON BUILDINGS.

(*Continued from* p. 313, *No.* 439.)

*A list of public and semi-public buildings in the E.C. district was published in our issue for March 25th, of domestic and religious buildings, colleges and schools in the same district in the issue for April 1st, of business premises in the same district in the issues for April 15th, April 29th and May 13th, and of hotels, restaurants, &c., in the same district in the issue for May 13th. A list of public and semi-public buildings in the E. district was published in our issue for June 3rd, and of religious buildings, colleges and schools in the same district in the issue for July 8th.*

## E. DISTRICT: PUBLIC AND SEMI-PUBLIC BUILDINGS (*concluded from p. 241, No. 434*).

| Building. | Architect. | Approximate Cost. | Remarks. |
|---|---|---|---|
| **1901.** | | £ | |
| Passmore Edwards Library, Roman Road, Bow. | S. B. Russell | 6,000 | The library is situated on a site 72ft. 6in. by 35ft. It stands on a high glazed-brick base, the materials used above being red bricks and Portland stone. |
| Plaistow Hospital Extension, corner of Samson Street and Credon Road. | E. T. Hall | 98,000 | The total provision for patients' beds is 179, and all buildings for patients are kept above ground on arched open basements. The isolation pavilion contains fifteen beds on two storeys in various wards. In the open air, but under cover, are the staircases, the sanitary accommodation, bathrooms, larders, bath docks, &c. The larger of the new scarlet-fever pavilions contain thirty-one beds on two floors. The floors are of steel and concrete construction. The facings are of red brick, with artificial stone dressings. |
| Poplar Hospital, New Wing | Rowland Plumbe | 14,000 | The basement is devoted to the out-patients' department, with waiting-, examining- and dressing-rooms for medical and surgical departments. Upon the ground, first and second floors are the three wards (41ft. long by 28ft. 6in. wide) for ten medical cases each. The third floor provides accommodation for the nursing staff, and includes a nurses' sitting-room (32ft. by 12ft. 6in.), with square bay, and seven nurses' bedrooms. The fourth and fifth floors are occupied by servants' bedrooms and a broad flat for recreation. |
| Scandinavian Sailors' Home, West India Docks. | Niven & Wigglesworth | — | The home is situate at the junction of the four main roads, East India, West India, Commercial and Burdett Roads. On the ground floor is the American room, fitted as a sailors' temperance restaurant, and smoking and attendants' rooms adjoining. In the basement are the kitchen and store-room departments. The first floor is for the general offices, board-room, library and literature departments. The second-floor comprises officers' and apprentices' rooms, with parlour, sleeping accommodation and bathroom. The next floor contains navigation room, leading up to the observatory, with rooms for the superintendent and workers. Above the hall, with a separate entrance from Gill Street, are dormitories for seamen, with bath and lavatories complete. |
| **1902.** | | | |
| London Hospital Operating Department. | Rowland Plumbe | 13,000 | The new department is situated on the third floor of the old front block of the hospital. It comprises a theatre, four operating-rooms, three anæsthetising-rooms, four recovery-rooms, five operation wards, and nurses', theatre superintendent's, attendants', surgeons' and dressers' rooms, also waiting, instrument and sterilising and examining rooms. |
| Passmore Edwards Hospital, East Ham (Shrewsbury Road). | Silvanus Trevail | | |
| Passmore Edwards Public Library, Plaistow. | S. B. Russell | — | This library is a branch of the West Ham libraries. It is planned as one large room, 60ft. by 60ft., with the lending department, which accommodates 12,000 volumes, placed in the centre. The exterior is of red brickwork and Bath stone. The roof, which is domed and barrelled, is of Stuart's granolithic. |
| Public Baths, Cathall Road, Leytonstone. | W. H. Duffield | — | The accommodation provides for a first-class swimming-bath 100ft. long by 30ft. wide, a second-class bath 80ft. by 30ft., and a number of slipper baths. |
| Town Hall, High Road, Ilford. | B. Woollard | — | The plan is so arranged that the offices and town hall form one block, but so that the hall can be entirely shut off from the offices. The offices are entered from the High Road. The first floor contains clerks' offices, committee-rooms and council-chamber, with ante-room and lavatory; and on the floor over, rooms for the caretaker are arranged. The town hall is entered from the High Road. It measures 57ft. by 74ft. and has a stage 33ft. wide, with two retiring-rooms on the same level. The hall is about 36ft. high and has a large curved ceiling, through which the light is admitted. The façades are of Monk's Park Bath stone. |

## E. DISTRICT: BUSINESS PREMISES.

| | | | |
|---|---|---|---|
| **1887.** | | £ | |
| Warehouses of Colonial Wharves, Ltd., High Street, Wapping. | Horace Alexander | 25,000 | The warehouses have frontages 95ft. long and 144ft. deep, the height being 90ft. There are eight floors and a basement, and the elevations are in stock and blue Staffordshire brickwork. The floors are supported by iron columns, and the building is surmounted by a cornice 6ft. deep in Portland stone. |
| **1891.** | | | |
| London and South-Western Bank Buildings, Romford Road, Forest Gate. | Edward Gabriel | — | The whole of the external work is faced with red bricks and terra-cotta. The banking hall is lined with glazed faïence and the bank fittings are in teak. In the basement are strong-rooms, and the upper floors are arranged for the manager's residence. |
| **1902.** | | | |
| Business Premises for Stuart's Granolithic Stone Co., Ltd., Glengall Road, Millwall. | Messrs. Clarkson | — | |

## E. DISTRICT: DOMESTIC BUILDINGS.

| | | | |
|---|---|---|---|
| **1875.** | | £ | |
| Ilford Cottage Home for Girls. | Ebenezer Gregg | — | The buildings include an infirmary, steam laundry, &c. The cottages are built with hollow external walls. |
| **1881.** | | | |
| Dockmaster's House, Royal Albert Docks. | Vigers & Wagstaffe | — | The house has red tile-hung gables above a base course of wood-framing enclosing plasterwork. |
| **1882.** | | | |
| Lowder Memorial Clergy House, St. Peter's, London Docks. | B. A. Paice | 5,000 | The house is Gothic in tendency. |
| **1883.** | | | |
| Artizans' Dwellings, Oxford Street, Whitechapel. | James Webster | — | The buildings are in stock brickwork, with red-brick dressings. |
| **1884.** | | | |
| Commissioners of Sewers' Dwellings for Artizans, Petticoat Lane. | Colonel Haywood, Engineer to the Commissioners. | 80,889 | The main face of the elevations is of yellow brickwork. The main front is in red brick up to a height of 40ft., with pilasters of the same material, surmounted by terra-cotta pediments. The buildings are 70ft. high, and there are five floors, the ground-floor giving accommodation for fifty shops. There are 300 suites of apartments, varying from one to three rooms. The total accommodation is for 1,200 persons. |
| East End Dwellings Co.'s Industrial Dwellings, Cartwright Street. | Davis & Emanuel | 13,790 | The buildings have a frontage of 370ft. |
| Metropolitan Railway Industrial Dwellings, Minories. | Walter Graves | 43,000 | The dwellings have a frontage of 240ft. and a depth of 70ft. The accommodation is for 1,000 persons. |
| Toynbee Hall, Commercial Street, Whitechapel. | E. Hoole | — | On the ground floor are a lecture hall, dining-hall and drawing-room; the kitchens, offices and servants' hall being situated in the rear. The accommodation on the first floor consists of bedrooms and sitting-rooms for twenty residents and a large common room. The second floor contains the servants' rooms. The building is faced with red brick and has Bath-stone dressings. |
| **1886.** | | | |
| Industrial Dwellings, Wentworth Street, Whitechapel. | E. Hoole | — | The buildings are faced with red bricks. |

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*Supplement to*
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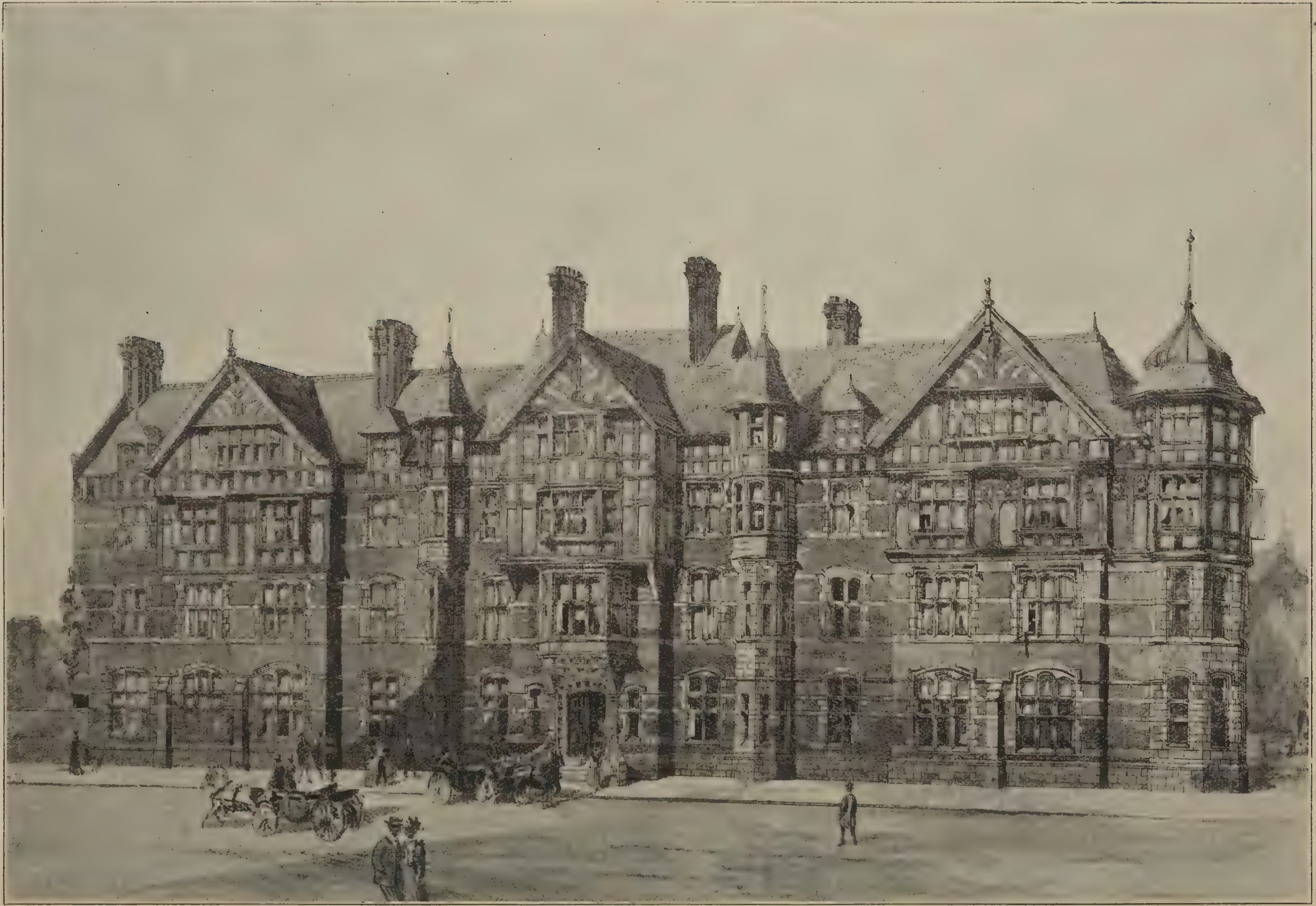
*Wednesday, August 5th,* 1903.



Great Western Hotel, Exeter. Silvanus Trevail, F.R.I.B.A., Architect.

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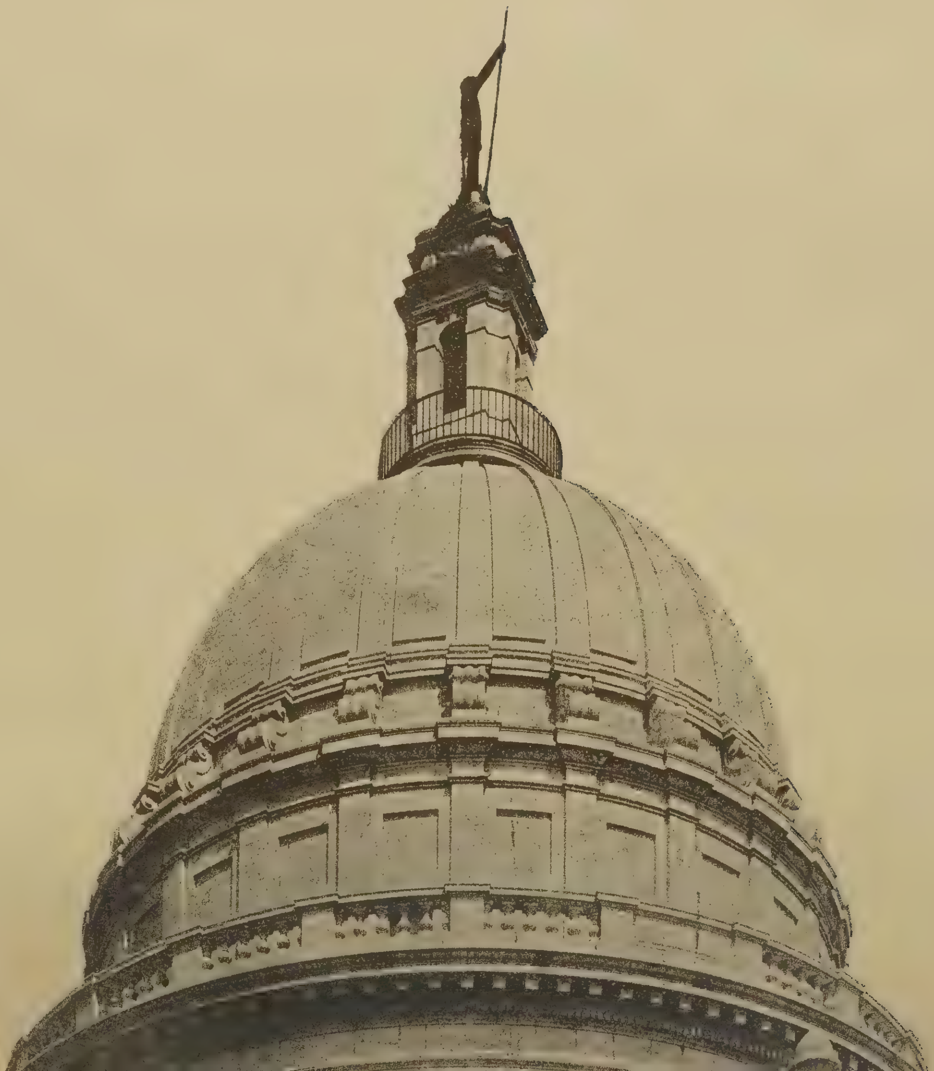

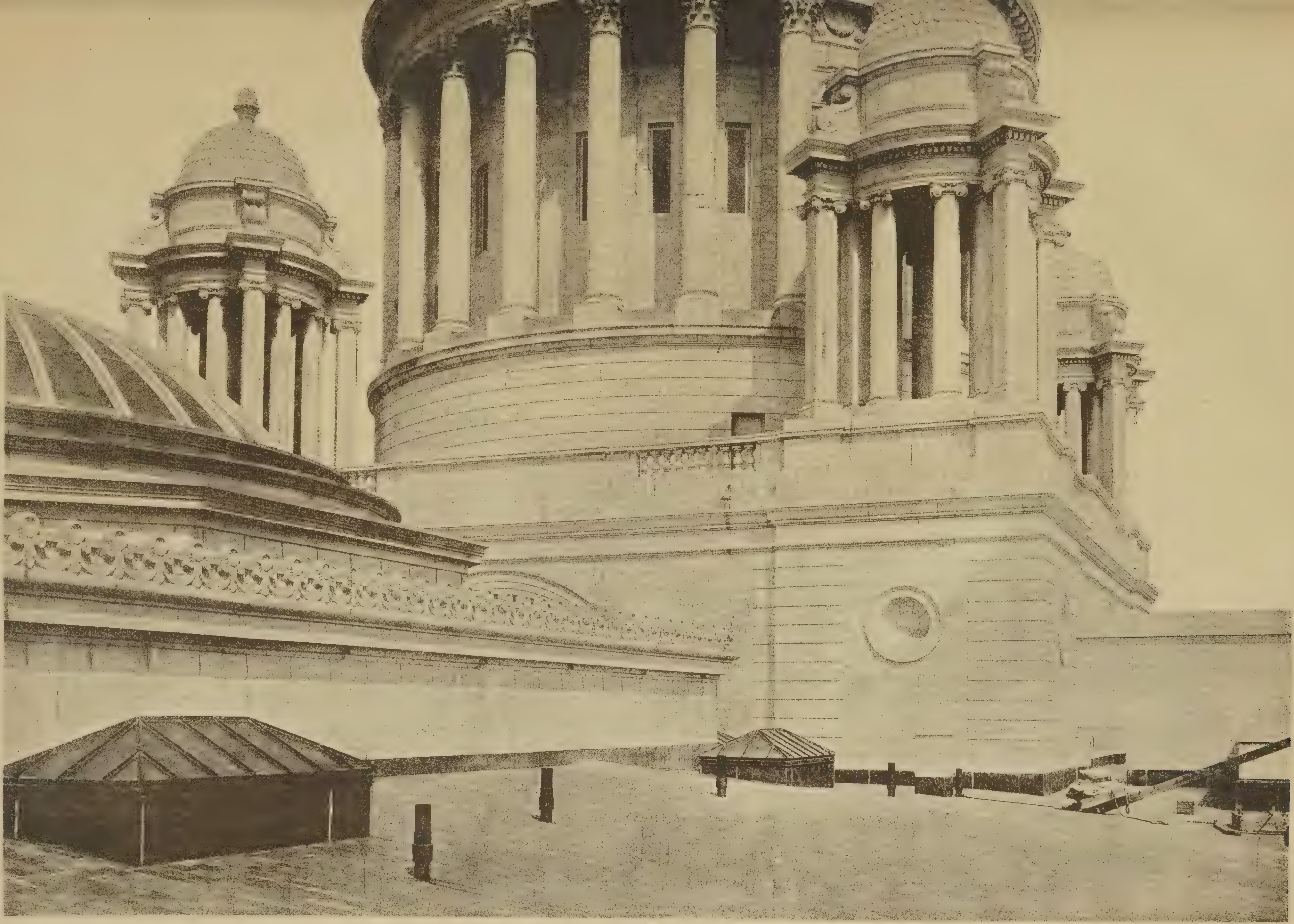

"INK-PHOTO." R. J. EVERETT & SONS, 56 LUDGATE HILL, E.C.

DOME OF THE RHODE ISLAND STATE HOUSE, PROVIDENCE, R.I. McKIM, MEAD & WHITE, ARCHITECTS.

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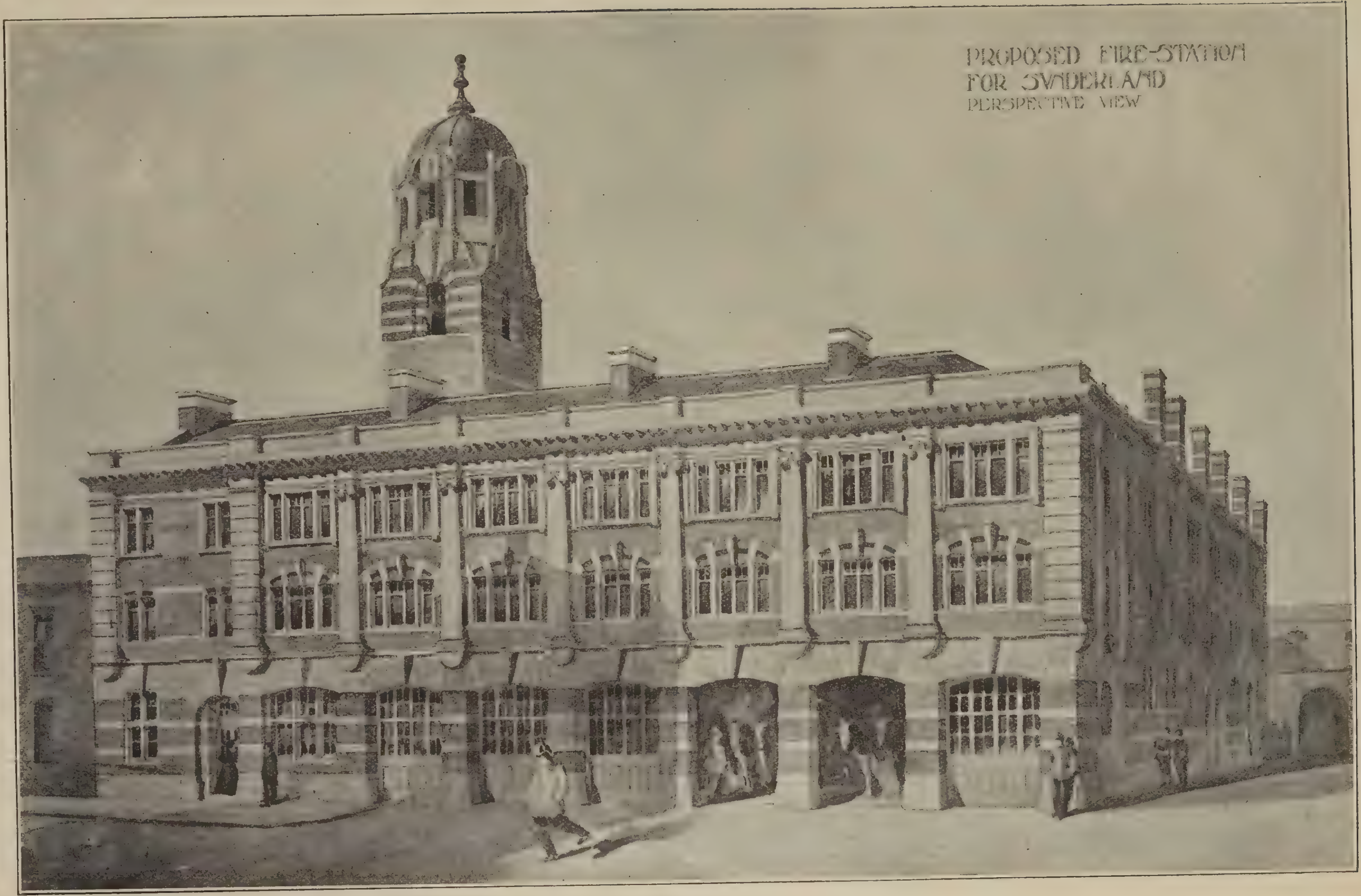

Mitchell and Raine, Architects.

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## E. DISTRICT: DOMESTIC BUILDINGS—*cont.*

| BUILDING. | ARCHITECT. | APPROXIMATE COST. | REMARKS. |
|---|---|---|---|
| **1897.** | | £ | |
| The Convent for the Sisters Marie Auxiliatrice, 26, Bow Road. | J. H. Eastwood | 6,280 | The walls of the building are of stock brickwork in cement, with red brick quoins, mouldings and facings; Bath stonework in entrance doorway, niche, pinnacles, &c.; Stuart's granolithic copings and staircases; slate roofs, walls finished inside with stucco; and terrazzo floors in corridors and entrance hall. |
| **1901.** | | | |
| Rowton House, Fieldgate Street, Whitechapel. | H. B. Measures | — | This building has a frontage to Fieldgate Street of 192ft. and a back frontage of 259ft., by a depth from front to back of 128ft., giving a total area of 29,589ft. Sleeping accommodation is provided for 800 men. The dining-room is chiefly top-lighted and seats 464 men at tables; the floor area is 5 832ft. The smoking-room accommodates 112 men at tables and the reading-room 144 men, in addition to easy-chairs. |

## E. DISTRICT: HOTELS, RESTAURANTS AND PUBLIC-HOUSES.

| | | | |
|---|---|---|---|
| **1875.** | | £ | |
| People's Café, Whitechapel | George Williams | 10,000 | |
| **1881.** | | | |
| Royal Albert Docks Hotel | George Vigers and Thomas Wagstaffe. | — | The ground and first floors are faced with red bricks, the second floor being rough-cast. |
| **1884.** | | | |
| Connaught Tavern, Royal Albert Docks. | George Vigers | — | The walls are faced with red bricks; and the foundations, which are laid on piles owing to the peaty nature of the soil, are carried down to a depth of 30ft. |
| **1893.** | | | |
| Red Lion Hotel and Shops, High Road, Leytonstone. | W. D. Church | — | The design for these buildings is late Gothic, freely treated. The materials are: Malm facings, with Monk's Park stone dressings, and red granite shafts with grey plinths to the ground storey. The buildings comprise, on the ground floor, a spacious bar, bar parlour, kitchen to serve bar, stores, &c., with cellars under bar. The first floor is devoted to masonic lodge purposes. The rest of the building is occupied by private apartments. |
| **1896.** | | | |
| Additions to the Three Nuns Hotel, High Street, Aldgate. | C. J C. Pawley | — | The additions face the High Street, Aldgate, and have a width of 26ft. 6in., while the flank elevation to Church Row is about 136ft. in length. The front elevation is of red-brick facings and Mansfield-stone dressings, with Suffolk red rubbers to the windows. The side elevation is in Opalite glazed facings with gault and Bath-stone dressings. The building consists of a basement and five floors above. The basement is used as a billiard-room and holds five tables. The ground floor is used as a grill-room, and on the first floor is the King's banqueting-hall, with the Queen's banqueting-hall at the back |

## S.E. DISTRICT: PUBLIC AND SEMI-PUBLIC BUILDINGS.

| | | | |
|---|---|---|---|
| **1875.** | | £ | |
| Lewisham District Board of Works, Catford Bridge | Elkington & Son | 9,784 | The building is semi-Gothic in style. It has Kentish Rag facings and Bath-stone dressings. |
| New Cross Public Hall | A. B. Hutchings | — | |
| Orphans Home, Southwark (North Wing). | Roger Smith | — | |
| Post-Office Building, Peckham. | - - - - | — | The buildings are faced with white Suffolk bricks and stone dressings, &c. |
| Royal Infirmary for Women and Children, Waterloo Road (additions). | E. M. Barry | 4,000 | The additions were designed to harmonize with the existing buildings. They consisted of a new storey and various alterations. |
| Temperance Hall, Blackfriars Road. | John H. Swan | 7,000 | The building has a 70ft. frontage, designed in the Italian pointed style, the facings being of red brick and Portland stone. The great hall holds 1,000 persons. |
| **1876.** | | | |
| Camberwell Workhouse (adjoining Nazareth House, Peckham). | - - - - | 45,000 | |
| Greenwich Union Infirmary | William Walker | | The infirmary will accommodate 250 patients, the wards being 106ft. long by 25ft. wide. |
| Newington Workhouse, Walworth (new buildings). | Henry Jarvis & Son. | 18,769 | There are new infirmary wards, board-room, medical officer's house, receiving wards, mortuary, porter's lodge, &c., included in the scheme. The new building is carried out in white brick with stone dressings. |
| Penge Vestry Hall | Elkington | 5,500 | |
| Victoria Baths, St. Martin's Lane, Peckham. | Higgs | — | The buildings cover two acres of ground. There are two swimming-baths running parallel, the first-class bath being 140ft. by 60ft., with eighty boxes for bathers. The second-class bath is 160ft. by 60ft. There are forty private and warm baths. An artesian well was bored to supply the water to the baths. It is capable of raising 25,000 gals. per hour. |
| **1877.** | | | |
| Greenwich Board of Works Offices, High Road, Greenwich. | Waller & Paxton | 7,000 | The materials used in the elevations were stock bricks and Portland stone. The central feature of the building is a portico carried up with stone pilasters to form a small clock tower. There is a board-room 57ft. 6in. by 40ft. by 22ft. high. |
| Metropolitan Central Fire-Brigade Station, Southwark Bridge Road. | George Vulliamy | 32,000 | The building is 60ft. long and 70ft. high, with a watch tower 78ft. high. There is accommodation for fifty-two firemen, twenty-eight married and twenty-four single men; also stabling for fourteen horses and houses for sixteen engines and twenty escapes. There are workshops, smithy, recreation ground, &c. The design is Gothic in character, carried out in red brickwork with Portland-stone dressings. |
| Newington Clock Tower, Newington Butts. | Henry Jarvis & Son. | — | The tower is 98ft. high and 14ft. square at base, the clock itself being placed at an elevation of 70ft. and the dial 5ft. in diameter. The foundation walls are of Portland-cement concrete 10ft. thick, and the brick footings 6ft. 4in. thick to ground level. |
| **1879.** | | | |
| Elephant and Castle Theatre, Newington. | Designed by late Mr. Robinson; carried out by Frank Matcham. | | |
| L. & S.W.R. Station, Frontage Buildings, Waterloo Road. | - - - | — | The frontage is 160ft. |
| **1880.** | | | |
| Loughborough Hall, Coldharbour Lane. | H. Parsons | — | The chief hall is 64ft. by 29ft. and 22ft. high. It seats 700 persons; a gallery to hold 140 persons is also provided. |
| **1881.** | | | |
| Camberwell Fire-Brigade Station, Peckham Road (rebuilding). | George Vulliamy | — | The building is 50ft. high, in three storeys, containing apartments for officers and men. White Suffolk bricks were used for facings, with red brick and stone for dressings, ornamental terra-cotta work being also introduced. There is a look-out tower 80ft. high at rear of building. |
| **1882.** | | | |
| Town Hall, corner of Spa and Neckinger Roads, Bermondsey. | G. Elkington & Son | 21,200 | The site comprises 49,000ft. super. The public hall will accommodate 1,400 persons, and is 80ft. by 52ft. 9in. by 37ft. 9in. high. On the ground floor is the board-room, measuring 46ft. 9in. by 29ft. 6in. by 20ft. high. |
| **1883.** | | | |
| Bricklayers' Club House Buildings, Southwark Bridge Road. | A. & C. Harston | 4,500 | The building covers an area of 2,800ft. super., having a principal front of 30ft. and a return front of 80ft., the height being 60ft. There are three floors faced externally with red brick. The hall on the ground floor, 76ft. by 30ft., is faced with red, white and yellow bricks. There are committee-rooms on the first floor, with secretary's and clerks' offices. |
| Public Hall, Rye Lane, Peckham. | T. Wilkins | — | The hall measures 90ft. by 45ft. by 22ft. in height, and affords accommodation to 1,200 persons. There are also a reading-room 45ft. by 26ft. and three smaller rooms 26ft. by 14ft., used as committee rooms. Refreshment and other rooms are provided on the ground floor. |
| **1884.** | | | |
| Miller Memorial Hospital, Greenwich. | Young & Hall | — | A circular form was adopted for the wards. The first portion of the work consisted of the administrative building and one ward pavilion of two storeys. The ground floor of the administrative block contains an operating-room. A separation ward kitchen and nurses' rooms are situated on the second floor. A small mortuary and post-mortem room are attached |
| Swimming Baths, Dulwich College. | Charles Barry | 2,500 | |

## S.E. DISTRICT: PUBLIC AND SEMI-PUBLIC BUILDINGS—*cont.*

| Building. | Architect. | Approximate Cost. | Remarks. |
|---|---|---|---|
| **1885.** | | £ | |
| Infirmary for the Southwark Union, Champion Hill, Dulwich. | Henry Jarvis & Son | 74,571 | The infirmary buildings have a frontage of 700ft. Sleeping accommodation is provided for seventy nurses and servants. There are ward blocks three storeys high, comprising twelve wards for 363 men and twelve wards for 400 women. The wards vary from 78ft. to 100ft. in length. |
| Swimming Baths at Ladywell and Lewisham. | Wilson, Son & Aldwinckle | 17,000 | Both buildings have first- and second-class baths, each 90ft. by 30ft, and also twenty-eight private baths. The style is Gothic carried out in red brick. The Ladywell baths cost £9,000. |
| **1887.** | | | |
| Free Library, Knight's Hill, Lower Norwood. | Sidney R. J. Smith | — | The building is of red brickwork relieved with Ham Hill stone and terra-cotta. There are lavatories, book-store, &c., in the basement and a house for the librarian over the front portion. |
| **1888.** | | | |
| Asylum for Deaf and Dumb Children, Old Kent Road. | A. R. Mullins | — | The accommodation is for eighty children. The buildings are in pressed red brick with Bath-stone dressings. |
| **1890.** | | | |
| Camberwell Green Baths and Washhouses. | Spalding & Cross | 24,000 | The accommodation provided is as follows:—First-class swimming bath for men, 120ft. by 35ft., with waiting-room and eighty-one boxes; second-class bath of similar size, with 103 boxes. These baths are set apart for the use of women on certain days. There are nearly 100 slipper-baths and 78 washhouses. The insides of the swimming baths are lined with white-glazed bricks. The first-class private baths are of porcelain and the second-class of iron. |
| Lewisham Central Public Library, High Street, Lewisham. | Albert L. Guy | — | The frontage of the building is 69ft., and the accommodation consists of librarian's room and apartments to the left and right respectively of the central entrance, large central hall and borrower's department, with lending library for 10,000 books. Out of this hall are reference library, news and magazine rooms, and store-rooms in basement. The whole of the upper floors are devoted to the librarian, with the exception of one large room for board meetings. The walls are of red brick and Corsham-stone dressings. |
| Public Baths and Washhouses, Goose Green, Dulwich. | Spalding & Cross | — | The first-class bath is 120ft. by 35ft., with the usual depth, and contains 130,000 gals. of water. The second-class bath is 70ft. by 35ft., and holds 100,000 gals. There are sixty slipper-baths. |
| Camberwell Infirmary Extension, Havil Road, Camberwell. | Robert P. Whellock | 14,665 | The new building, which is circular on plan, contains room for 105 beds, including dormitory accommodation for nurses and a few cases requiring special treatment. There are four storeys, each containing a ward for twenty-four beds, together with nurses' kitchen, lavatories, &c. There are two lifts for patients and goods. |
| Students' Residential College, Guy's Hospital. | Woodd & Ainslie | — | The building is adapted for purposes of chambers and a medical students' club. The club premises comprise a gymnasium, dining hall with open-timber roof, and a reading- and smoking room. The chambers consist of sets of either one, two or three rooms each. A subway connects the college with the hospital. |
| **1891.** | | | |
| The Livesay Library, Old Kent Road, S.E. | R. P. Whellock | — | |
| **1892.** | | | |
| Fire Station, Lordship Lane, Dulwich. | Thomas Blashill | 10,610 | The frontage, which is of red brick relieved with Portland-stone dressings is 80ft. in length and the depth 250ft. There are five storeys, including the basement. The roof is covered with Broseley tiles. A look-out tower 100ft. high has been erected. |
| Public Library, Bermondsey. | J. Johnson | — | The principal entrance in the centre of the building, emphasized by an Ionic portico, leads to a hall and staircase 15ft. wide; on the right is the newspaper room, 41ft. by 33ft. Opposite the entrance is a lending library, 41ft. sq., fitted with cases for 20,000 volumes. The reference library on first floor is 41ft. sq., with a domical roof in the centre, supported by four Corinthian columns. Next the landing is the magazine room, 41ft. by 24ft.; adjoining is the ladies' reading-room, 20ft. by 16ft. The exterior is of Renaissance character freely treated, executed in red Elham bricks, with dressings of Monk's Park Bath stone. The carving is by Mr. Baird, of Herne Hill. |
| Royal South London Ophthalmic Hospital, junction of Waterloo and Westminster Bridge Roads. | Keith D. Young | — | The frontage is 174ft. in length. The building consists of a half-basement, ground-floor and four floors above, with a flat asphalted roof 4,000ft. super. in area. The basement contains a large waiting hall, and the ground floor surgeons' examination and consulting rooms, ophthalmoscope room, bandaging rooms and offices for the staff. The first floor contains private patients' rooms and matron's rooms, and the second and third floors in-patients' wards. |
| Workhouse for the parish of St. Giles, Camberwell, East Dulwich. | Thomas W. Aldwinckle. | 70,000 | Accommodation is provided for 1,000 inmates, and provision is also made for sixteen beds in two lying-in wards. The workhouse is designed on the pavilion system, the administrative block being in the centre. |
| **1893.** | | | |
| Central Library, Peckham Road, Camberwell. | R. P. Whellock | 12,000 | This building, which is in the Renaissance style, is faced externally with red bricks and Portland stone, the arcaded porch being supported by Ionic columns of polished Cornish granite. The main corridor is 10ft. wide and is partitioned with arcaded grey granite columns. At the back of the building is a public garden and recreation ground. |
| Fine Art Gallery, Peckham Road. | Ernest George | — | The buildings include picture galleries, a lecture hall and a library. |
| Horniman Free Museum, London Road, Forest Hill. | —— | — | The museum consists of twenty-two apartments. |
| **1894.** | | | |
| The Tower Bridge | The architectural work by G. D. Stevenson; engineer, J. Wolfe Barry. | — | The scheme adopted for the bridge was that of a high-level bridge with a low-level roadway, opening on the bascule principle, at the suggestion of the late Sir Horace Jones, City architect, whose death occurred at the completion of the substructure, the work being continued by Mr. J. Wolfe Barry, the engineer. Modifications in the ironwork necessitated fresh designs for the superstructure, which were prepared and carried out by Mr. G. D. Stevenson, the assistant of Sir Horace Jones. Caissons 90ft. by 194ft. were used for the foundations, which are, however, 204ft. 6in. by 100ft. These piers support the whole weight of the land spans, opening spans, main towers and top footways amounting to nearly 70,000 tons. The piers are the largest in the world, and are built of gault and Staffordshire blue bricks and faced with Cornish grey granite 2ft. thick, with bonders going 4ft. into the solid brickwork. In the piers are situated the engine-rooms, accumulators and hydraulic machinery for the raising and lowering of the bridge, and in the centre portion of the piers are the bascule chambers. On either side of the piers are the watch chambers. Each tower consists of four iron octagonal columns, braced together with cross-ties, around which the towers are built. From the tops of the columns the suspension chains are supported. The two high-level footways span the river at a height of 141ft. and are 237ft. long. They are reached by two staircases and lifts in each tower. These footways are built on the cantilever principle. The towers are executed in grey granite, rock-faced, and brown Portland stone. The walls are 2ft. 3in. thick, backed by gault brickwork, the stone dressings going right through. The height of the towers from the bottom of the foundation to the top of cresting is 264ft, and the foundations are carried down 27ft. below the river-bed. |
| Workhouse Infirmary, High Street, Lewisham. | A. & C. Harston | 57,000 | The buildings are designed to accommodate 372 patients, and are divided into four groups, a corridor connecting the wards and administration section. They include a medical superintendent's residence and a porter's lodge. The patients' blocks are of three storeys, each containing two wards for twenty-eight beds and smaller wards for six beds. Each ward has its own bathroom and sanitary appointments, and each pavilion has a central staircase and lift. The centre of the building is marked by a dome, and the length of the frontage is 300ft. The materials used are grey stock bricks for the walls, with red facings and some Portland stone in front. |
| **1895.** | | | |
| Concert Hall, Blackheath - | Edmeston & Gabriel. | — | The exterior of the building is decorated with gesso-duro work executed by Mr. Seale, sculptor, and is faced with pressed bricks and terra-cotta dressings. The main hall is 94ft. long to the proscenium arch and 58ft. in width. The floor is constructed for dancing purposes, and the roof is panelled with Goloach moulding. The stage is 29ft. deep. The main hall accommodates 1,000 persons, whilst 200 could find seating room on the stage. |
| Public Baths and Washhouses, Lavington Street, Southwark. | F. T. Smith | 30,000 | The total area covered by the building is 16,260ft. super. There is a first-class swimming-bath 120ft. by 48ft., and having a water capacity of 100, 00 gals. The second-class bath is 75ft. by 30ft. First- and second-class private baths are provided, and the washhouses give accommodation to twenty-four washers. |
| **1896.** | | | |
| Brook Hospital, Shooter's Hill. | J. W. Aldwinckle | 240,000 | Adjoining the hospital is an ambulance station, providing coach-houses for twenty ambulances and stabling for sixteen horses and a residence for the superintendent, home for eight nurses, and accommodation for male and female servants. Cost £15,000. The site consists of about 32 acres, two-thirds of which are occupied by the buildings. The accommodation is for 500 patients. |
| Passmore Edwards, South London Art Galleries and Technical Institute, Lord Leighton Memorial, Peckham Road. | Maurice B. Adams | £7,000 | The building is executed in red brick with Portland-stone dressings. |
| Public Library, Gordon Road, Nunhead. | R. P. Whellock | £2,500 | The building has a frontage of 120ft. and a depth of 60ft., and contains news- and magazine-rooms, and a lending department, with shelving for 13,000 volumes. |
| **1897.** | | | |
| Broadway Theatre, Deptford. | W. G. R. Sprague | — | The pit is 75ft. deep with a clear width of over 60ft., and the stage is 40ft. deep with a width of 75ft. The auditorium will seat 2,500 people. |
| The Lunatic Pavilion, High Street, Lewisham. | Robert Williams | — | The exterior of the building is of red and yellow stocks, with Doulting stone sills, heads and copings. The building adjoins the infirmary, and was erected for the Lewisham Board of Guardians. It contains male and female wards, together with padded rooms and acute wards. |
| Medical School Buildings, Guy's Hospital. | J. H. T. Woodd | £12,000 | The lecture theatre holds an audience of 100, and has a gallery to hold nearly as many, supported without pillars. The space between the upper tiers of seats forms three dark rooms. In the basement of the building are two classrooms to hold forty students each, the rest of this floor being used as store-rooms. Upstairs are laboratories and other rooms for chemical research work. On the top floor the whole front of the building is devoted to the histology laboratory. This forms a part only of the scheme, £35,000 being required for its completion. |

*(To be continued.)*

# JOIST AND WALL HANGERS.[*]

**By F. E. KIDDER, F.A.I.A.**

ALTHOUGH wrought-iron and steel stirrups have for a long time been used for the support of floor-beams, headers and girders in buildings, no complete tests to determine their carrying capacity appear to have been made until about three years ago, when a series of tests on a common stirrup, a Van Dorn hanger and a Duplex hanger were made at the Massachusetts Institute of Technology. Since that time other comparative tests have been made, and last November a very serious accident occurred in a large warehouse in Minneapolis, due to the failure of a steel wall-hanger of the stirrup type. This accident and the tests above mentioned have led me to prepare this paper, with the view of calling attention to the danger of overlooking the tendency to fail by bending and crushing of the wood, in the case of hangers of the stirrup type, and incidentally to the comparative advantages and disadvantages of different hangers.

Before proceeding farther it will probably be well to describe the various styles of hangers now on the market.

The oldest and in this section the most common style of hangers is the common stirrup, forged by hand from bar iron or steel. The common shape of this hanger is shown by Fig. 1. Wherever the beams to be supported come directly opposite each other, it is the common practice to use a double stirrup, formed by welding together two single stirrups.

Within the past ten or twelve years several patented forms of stirrup have been placed on the market by different manufacturers. The first of these, in the point of time, I believe to be the Van Dorn steel hanger, shown by Fig. 2. Following this came the National, Cleveland and Lane hangers (shown by Figs. 3, 4 and 5), and possibly others. All of the above, as you will see, are of the stirrup type, but are bent and forged by machinery instead of by hand, the material used being a high grade of mild steel.

As a rule they are neater in appearance than the ordinary stirrup and are in many ways preferable to it, provided they are not made too light. With the single exception of the Cleveland hanger, none of these forms are made to turn down over the back of the carrying-beam, but are simply secured to the top and side of the beam by spikes.

Besides these there are the Goetz, Rieseck and Duplex hangers (Figs, 6, 7, 8 and 9), the first two being in effect a short stirrup, but made to let into holes bored in the side of the beam just above the neutral axis, while the last differs from all other joist-hangers in that it is made of annealed cast-iron and in an entirely different shape. These three styles of hangers possess in common two advantages over all hangers of the stirrup type in that the settlement of the floor and ceiling from the shrinkage of the carrying-beam is only about one-half what it is where the stirrup is supported from the top of the beam, and also that they offer no obstruction to the flooring.

The matter of shrinkage is an important consideration where the ceiling is to be plastered and decorated.

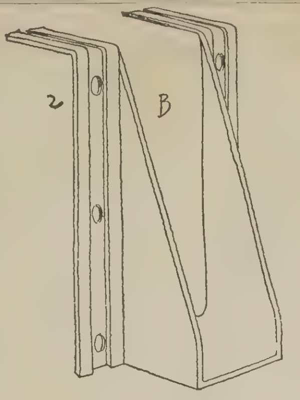

FIG. 2.—THE VAN DORN HANGER.

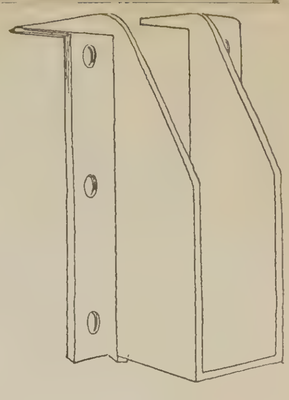

FIG. 3.—THE NATIONAL HANGER.

When used in pairs, all the patent stirrups are connected by riveting their top flanges to a steel plate. The Van Dorn, National, Cleveland and Lane hangers, when used singly over steel beams, are bent around the top flange of the beam. The Van Dorn and National hangers are made into wall-hangers by riveting the top flanges to a steel plate, usually turned up at the back, so as to tie into the wall. The arms of the Lane and Cleveland wall-hangers are made long enough to build into the wall 8in. and turn up at the back. The Rieseck wall-hanger is made to lie on a specially forged steel plate with the wall-end of the arms bent down into the brickwork. The Duplex wall-hangers, while made on the same principle as the joist-hangers, are of quite a different shape, three styles of the Duplex wall-hangers being shown by Figs. 10, 11 and 12.

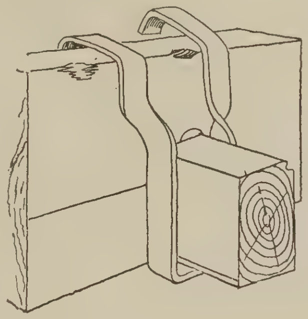

FIG. 1.

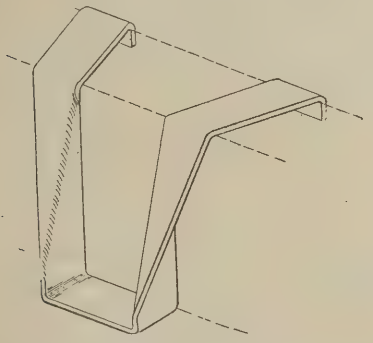

FIG. 4.—THE CLEVELAND HANGER.

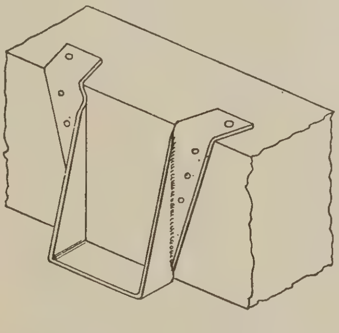

FIG. 5.—THE LANE HANGER.

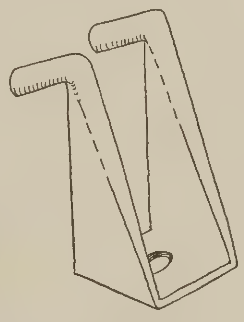

FIG. 6.—THE GOETZ HANGER.

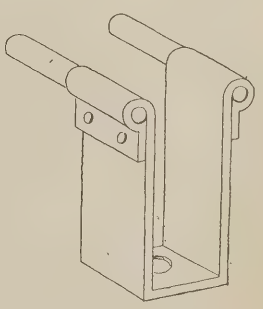

FIG. 7.—THE RIESECK HANGER.

### Effects of the Load on the Hanger and Timber.

The tests that have been made on single hangers of the stirrup type, *i.e.*, those which are supported from the top of the carrying-beam, show that the first effect of loading is to compress the timber under the top flanges. Thus, Mr. W. A. Tyrell, C.E., who made a test for Messrs. Mauran, Russell & Garden, architects, of St. Louis, says of the wrought-iron stirrup, made from 3in. by $\frac{3}{8}$in. iron, that it began to fail very early by crushing the wood on the near side and rising on the far side, and that when the load on the hanger reached 3,500lbs. it had crushed into the wood about $\frac{1}{8}$in. and had risen 1in. Under this load, the tensile stress in the sides of the stirrup was only 1,555lbs. per sq. in., or only about one-eighth of the safe working strength of wrought-iron. When the load reached 5,000lbs. the hanger had bent to such an extent that it was in danger of slipping over the carrying-beam, and the tail-beam was blocked up. At the time of practical failure, therefore, the stress in the sides of the hanger was but 2,222lbs. per sq. in.

In the test at the Massachusetts Institute of Technology in April, 1900, a common stirrup, made from $\frac{3}{8}$in. by $2\frac{1}{2}$in. wrought-iron, bent and pulled over the trimmer at a load of 13,750lbs. or at a stress of 7,333lbs. per sq. in. Fig. 1 gives a pretty fair idea of the way in which the hanger bent, and of the extent to which it crushed into the carrying-beam. Of course the hanger settles with the crushing of the wood, and the floor settles with it. The stirrup tested at the Institute of Technology, although having a smaller sectional area, offered greater resistance to bending than the one tested by Mr. Tyrell, probably because the carrying-beam was only one-half as thick in the former case as in the latter.

Theoretically, the wider the carrying-beam the greater will be the bending-moment on

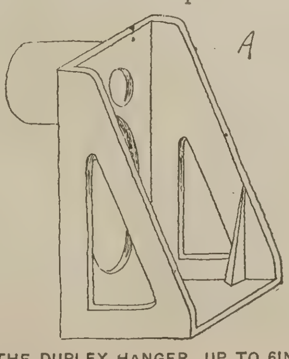

FIG. 8.—THE DUPLEX HANGER, UP TO 6IN. × 12IN.

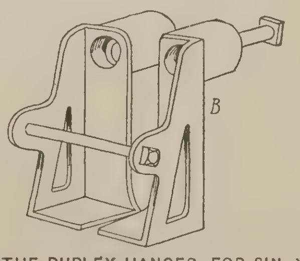

FIG. 9.—THE DUPLEX HANGER, FOR 8IN. ×12 IN. AND MORE.

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[*] A paper read before the Colorado Chapter of the American Institute of Architects.

the top of the stirrup, but as soon as the iron lifts off from the back edge of the beam, then, of course, the bending-moment is concentrated near the front edge. The tests previously referred to show that the patent stirrups fail in the same manner as the common stirrups, *i.e.*, by the crushing of the wood and straightening out of the top flanges. Thus a 6in. by 12in. Van Dorn hanger began to straighten out at a load of 13,300lbs., and failed—*i.e.*, slipped off—at a load of 18,750lbs., showing a little greater resistance to bending than the common stirrup. The Van Dorn hanger was spiked to the carrying-beam with two spikes in each top flange, and three in each side flange. In the test made by Mr. Tyrell a 10in. by 14in. Van Dorn hanger crushed down the wood at the near side, and rose about $\frac{1}{4}$in. at the ends, under a load of 5,500lbs. This hanger was also spiked to the carrying-beam.

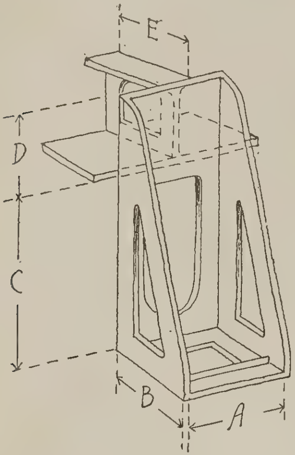

FIG 10.—DUPLEX WALL-HANGER.

The Van Dorn Iron Works Co. report a test in which 50,000lbs. were supported by four of their 3in. by 14in. hangers without the least observable effect on the hangers; but in this case the timbers were of oak, which offers the greatest resistance to crushing across the grain of all framing timber, and the load did not reach the point at which the hanger began to fail in the Massachusetts Institute of Technology test.

The hanger which failed in the Minneapolis warehouse was of the same shape as the National hanger, and appeared to have been made from a 2in. by 4in. by $\frac{1}{4}$in. steel angle, with the 4in. flange sheared and bent to the shape shown in Fig. 13, and the 2in. flange entirely cut out under the seat for the beam. The top of the hanger was riveted to an 8in. by 16in. by $\frac{1}{4}$in. plate by four $\frac{3}{8}$in. rivets through the 2in. flange. A small angle-bar was also riveted to the rear edge of the wall-plate.

According to figures and sketches prepared for the "Engineering News" by Mr. G. A. Turner, M.A.S.C.E., of Minneapolis, the actual load on the hanger which failed was about 15,000lbs., and failure was due to crushing of the inner edge of the brick wall under the hanger, and the bending of the latter until it was pulled out of the wall.

Fig. 14 shows the appearance of the hanger after failure, and also the distortion in the wall-plate, which was too thin to distribute the load evenly over the wall. Attention is also called to the manner in which the bottom of the hanger was bent, which illustrates another weak point to be guarded against in all stirrups where the beam is 8in., 10in. or 12in. wide. In this particular instance the beam was 12in. wide, and was supported on a shelf 4in. wide, $\frac{1}{4}$in. thick and 12in. between supports. The total load for which the beam was designed was 38,500lbs., which would give a reaction on the hanger of 19,250lbs. "Considered as a uniform distributed load, this reaction would produce a bending-stress in the shelf about ten times the ultimate strength of the steel. The shelf will, therefore, be bent down so that the joist bears only along the side edges, and these, in turn, will be crushed until the hanger becomes virtually a suspension-band. The stress in this band, practically pure tension, with a sag of 1in., would amount to nearly 30,000lbs. on a section of 1 sq. in."

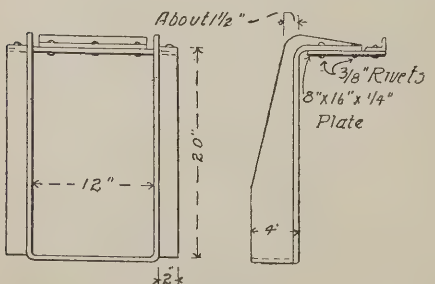

FIG. 13.

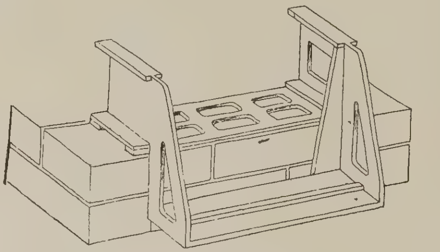

FIG. 11.—DUPLEX WALL-HANGER.

When a steel stirrup cannot fail by bending and slipping from the support, it is most likely to fail by breaking at one of the bottom angles. At this point the shear is equal to one-half of the load on the stirrup, and owing to the bend in the steel or iron this is usually the weakest part of the metal.

In the warehouse at Minneapolis the upper floor in falling carried with it the five floors below, and the hangers supporting these five floors failed at the junction of the bottom shelf with the bottom of the hanger; in most cases the bottom of the stirrup was straightened down vertically, as though it were a strap, hinged to one side. These hangers were not as heavily loaded as those supporting the sixth-floor beams, and probably had not suffered any deformation at the time the failure occurred and the sudden shock caused the hangers to break at the weakest point.

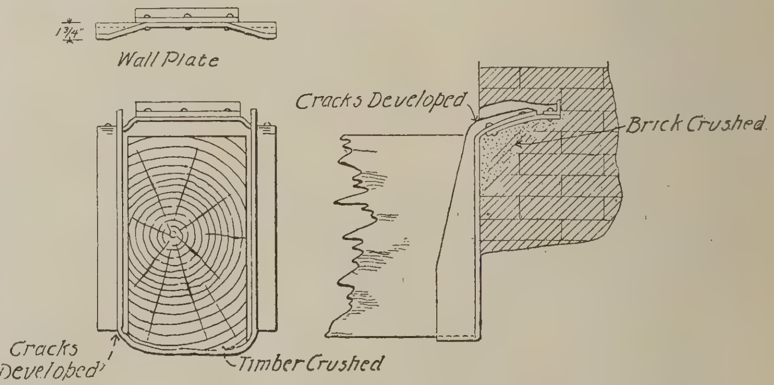

FIG. 14.—A HANGER THAT FAILED IN A WAREHOUSE AT MINNEAPOLIS.

*Strength of Double Stirrups.*—While the bending effects in a double stirrup are similar to those in a single stirrup, particularly in the bottom shelf, yet because of their being double they cannot slip over the carrying beam and the metal must necessarily break before the beams can fall. The only test on a double stirrup that has come to my knowledge is one made by the Otis Steel Co., of Cleveland, on November 9th, 1900. The stirrup in this case was made to receive two 8in. by 12in. timbers and to set over a 12in. by 14in. girder. The metal was $\frac{3}{8}$in. by $2\frac{1}{2}$in., bent and twisted in the usual way. At 57,650lbs. on both beams the stirrups broke at one of the lower corners, showing that the weakest point is at these corners, as previously noted. The girder was compressed $\frac{5}{16}$in. where the stirrup was applied; the bottom of the stirrup bent $\frac{1}{2}$in., and the top about the same as you can see (Fig. 15). The tensile-stress in the sides of the stirrups at the time of failure was 15,732lbs. per sq. in.

*Strength of the Goetz Hanger.*—I know of no definite tests of the strength of the Goetz stirrups, but have been told that the slanting hook has a more injurious effect on the carrying-timber than if it were at right angles to the face of the beam. Owing to the hooks having a circular section, they are better adapted to resisting a bending strain than a flat section of the same area. Round pins also do not appear to crush into the timber as much as flat bars.

*Strength of the Rieseck Hanger.*—I know nothing of this hanger except what is stated in the manufacturer's circular, and no tests are quoted. There is probably no question as to the strength of the strap, when the beams are not more than 8in. thick. The only criticism that I have to make is the bending-moment on the arms and the leverage which they must exert on the top of the carrying-beam. If the arms were solidly fixed in any unyielding material, the theoretical bending-moment on each arm would equal one-half of the load multiplied by one-half of the width of the strap. Practically the bending of the floor-beam will naturally throw a large proportion of the weight on the outer edge of the seat, which will increase the bending-moment, and the bending-moment will bring a considerable pressure on the outer fibres of the carrying-beam, and any crushing of the latter will still further increase the bending-moment. Without wishing to injure the reputation of the hanger, I do not think this is as good a pattern as the Goetz hanger.

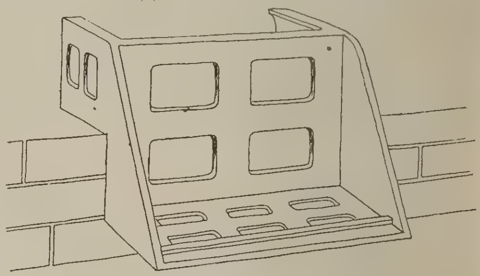

FIG. 12.—DUPLEX WALL-HANGER.

*Strength of Duplex Hangers.*—When these hangers were first put on the market, many persons were afraid that, being of annealed cast-iron, they would be unreliable, and it was also feared that the holes bored into the carrying-timber would weaken it. As to any possible danger resulting from imperfect annealing, there is this to be said, that many millions of these hangers are now in actual use in buildings, a great many of them having been in place from eight to ten years, and the only accident resulting from their use that is known to have occurred was at the Sears-Roebuck Building in Chicago, where a wall-hanger designed for 10in. by

10in. to 10in. by 16in. beams was used to support a 19in. by 16in. flitch-plate girder loaded with pressed brick and cement to the extent of about 1,000lbs. per sq. ft. I have also been assured by the manager of the company that every hanger is thoroughly tested before it leaves the factory. The strength of the Duplex hangers, as shown by carefully conducted tests, exceeds that of the stirrup hangers when made of the usual thickness of metal, *i.e.*, when the strength of the stirrup is measured by its resistance to bending. (They also crush the wood less than any other hanger.) In the tests conducted by Charles E. Fuller at the Massachusetts Institute of Technology in April, 1900, one 4in. by 12in. Duplex hanger failed at a load of 13,600lbs. by the breaking out of the bottom of the hanger. Another hanger of the same size failed under a load of 14,360 lbs. by breaking off under the nipple. As the safe distributed load for a Georgia pine beam 4in. by 12in., 12ft. long, is 9,600lbs., the end reaction would be 4,800lbs., so that the hangers have a safety-factor of about 3 for that length of beam, while for a white-pine beam of the same length the safety-factor would be nearly 5. A No. 35 two-part Duplex hanger tested at the same time failed under a load of 39,550lbs. by one side breaking off short under the nipple. In the test made by Mr. Tyrell, at St. Louis, a No. 75 Duplex hanger carried a load of 38,000lbs. without any apparent effect on the hanger. I have the statement from the Duplex Hanger Co. that they have tested their No. 75 hanger to over 60,000lbs. without a sign of fracture; this would be equivalent to a distributed load on the joists of 120,000lbs., or over 600lbs. per sq. ft. over an area 12in. by 16in.

We will now look at the effect on the carrying-beam of the holes bored for the nipples. In the case of the two 4in. by 12in. hangers tested, the load had no injurious effect on the header except to slightly compress the bottom of the hole. In the case of No. 35 hanger a slight longitudinal crack appears to have been developed about opposite the centre of the holes, and the bottoms of the holes was compressed about $\frac{3}{16}$in.

During the test of the No. 75 hanger, at St. Louis, when the load reached 27,360lbs., a slight crack was developed in the girder between the spools, and extended a short distance on both sides. Under the final load of 38,000lbs. this crack had increased slightly in length and width, the washers on the far side having sunk about $\frac{1}{8}$in. into the timber. The joist was crushed about $\frac{1}{4}$in. where it rested on the hanger.

From these tests, and general observations where the hangers have been used in actual construction, the holes for the spools do not appear to have any injurious effect upon the carrying-beam, until the loads exceed the safe loads for the timber beams and girders. The only case in which the weakening effect of these spools would need to be considered would be where a number of the larger hangers were used close together, in which case it would seem wise to increase the thickness of the carrying-timbers sufficiently to make good any weakening effect of the holes. This would also be true in regard to the Goetz and Rieseck hangers.

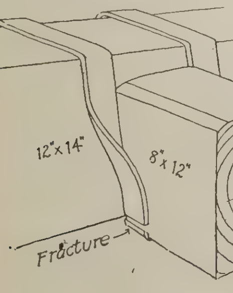

FIG. 15.—FAILURE OF A DOUBLE STIRRUP.

### Conclusions.

The conclusions that may fairly be drawn from the preceding analysis are in part, at least, as follows:—

(1) That it is impossible to determine the safe carrying-capacity of a stirrup hanger directly from the tensile-strength of the steel or iron, unless better provision is made for uniformly distributing the load over the top shelf. The ideal stirrup would be constructed with a bracket above the hooks, as in Fig. 16, strong enough to prevent the latter from straightening, in which case the full stress would be thrown on the lower angles of the steel or iron. This has been attempted to some extent in the National hanger.

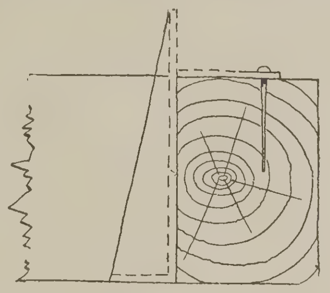

FIG. 16.

(2) That it is not advisable to use less than $\frac{3}{8}$in. thickness of metal for common stirrups, except where light beams are to be supported.

(3) That the patent stirrup hangers are, as a rule, made too thin.

(4) Wherever a stirrup is used to support a heavily loaded timber, or the end of a truss or girder, the bearing of the metal on wood, the resistance to bending or straightening of the top hook, or flanges, and the shearing or tearing of the metal at the bottom corners should all be very carefully considered.

(5) That the Duplex hangers give ample strength for the size of beams for which they are intended, except possibly where a very short beam is loaded to its full capacity, in which case the load on the hanger should be computed and compared with the data given above.

The advantage of the Duplex and Goetz hangers in lessening the settlement due to shrinkage in the carrying-timber has already been referred to.

In regard to wall-hangers, the same principles apply to them as to joist-hangers, the best hanger being that which is so designed as to most perfectly distribute the load over the bearing-surface of the masonry, while at the same time possessing the requisite tensile-strength in the sides and bottom. For distributing the weight on the wall there is certainly no wall-hanger now on the market which approaches the Duplex, and if steel hangers could be economically made on the same pattern they would give the ideal construction.

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**In the Rebuilding of Guisborough Hall** (see p. 3) the problem was to provide billiard-room, business-room, with nurseries, bedrooms and bathrooms upstairs. This involves rebuilding much of the main block of the house, and practically the whole of the south front, and so doing away with the existing sash windows. However, the main lines of the old building and the roof have been retained. The walls and stone dressings are of a warm brown stone from the neighbourhood, and the slates for the roof from Westmorland to match the old parts of the house. Mr A. C. Martin, of 75, Newman Street, W., is the architect.

# Bricks and Mortar.

**Aphorism for the Week.**

*A genuine really great talent has its greatest happiness in execution.*—GOETHE.

*In idleness alone is there perpetual despair.*—CARLYLE.

**Our Plates.** OUR illustration of the Rhode Island State building (which is taken from the "American Architect") will be of particular interest at the present time as an example of the work of Mr. McKim, to whom the Royal Institute of British Architects recently presented the Royal Gold Medal. It is a good example of Mr. McKim's best work, showing a fine feeling for proportion, sense of scale and refined detail, and if the criticism may be levelled at it of leaning to the French school of architecture it must be admitted that in the architect's crucible it has been transmuted into a form that is more American than French, and has been given a noble feeling that expresses the best characteristics of the American nation.—The Great Western Hotel at Exeter is designed for an excellent site close to the St. David's Station. The picturesque open-timbered style has been adopted to agree with the traditions of the ancient city of the west, where, unfortunately, too many of the old examples have been removed. The architect is Mr. Silvanus Trevail, F.R.I.B.A., of Truro, president of the Society of Architects.—The ground floor of the proposed fire-station at Sunderland contains accommodation for four fire-engines, a horsed escape, ambulance, watch-room and superintendent's office. The horse stalls are arranged immediately behind, and with the horses facing the engines so that they can take their positions at a moment's notice. A hospital stable and hay store, &c., is provided in the yard. On the first floor above the engine-room are a dormitory for sixteen men, a reading-room, mess-room, a smoking-room, bathroom and lavatories. The superintendent's quarters are also on this floor. On the second floor are two dwellings for married firemen, the bedrooms of superintendent's quarters and a large billiard-room. The hose tower is connected with the interior on the ground floor by an opening immediately behind the engines; it also has an opening to the yard.

**A Modern Infirmary.** THE CAMBERWELL INFIRMARY, though technically a parish infirmary, is really a general hospital dealing with a large number of accident and acute cases of all kinds. The old infirmary in Havil Street has been altered and modernized to form part of the larger institution, which is now practically completed. The buildings occupy several acres of ground, are arranged on the "scattered home" system (which the St. Giles Board claim to have introduced for the first time into the metropolis), and are all connected by glass-covered ways and subways. The accommodation has been increased from about 330 to 800 beds, and includes a separate block for children, who, in the absence of separate provision for them, have hitherto been treated with the old people, but can now be accommodated separately to the number of about eighty. There are about twenty wards which can be used for isolation cases, and special wards for cases of consumption, arranged as nearly as possible on "the open door" system, with flat roofs for airing courts. All the modern electrical appliances have been introduced for medical treatment, among other improvements being the electric bath, electric lifts and labour-saving devices of various kinds. The contract price for the new buildings amounts to close on £170,000, which the modernization of the old structures brings up to nearly £200,000. The site faces Brunswick Square (a well-wooded open space recently acquired for the public), and although close to the main highway is quite removed from the noise of the traffic. The formal opening of the new block (Mr. Edwin T. Hall, architect) was announced in our last issue. Messrs. Holliday & Greenwood were the builders.

**A Colony of Workmen's Dwellings.** A COLONY of workmen's dwellings was opened on Saturday at Battersea. It has been erected by a London Borough Council under the provisions of Part III. of the Housing of the Working Classes Act of 1890, and is situated on what were formerly known as the Latchmere Allotments. There are six streets or roads, giving accommodation for 315 families. There will be twenty-three houses with two five-room tenements, sixty-nine with two or three rooms on each flat, seventy-three with from two to four, and others with tenements of three, four and five rooms. Each tenement will be absolutely self-contained, with its own separate entrance, its own garden, and in the great majority of cases its own range, copper and bath combined in an ingenious manner. In addition, the tenants will have the advantage of the municipal electric light supplied on the penny-in-the-slot system at a scale which works out at $\frac{1}{4}$d. per hour for a 16 c.p. lamp, and of municipal water coming direct from the Council's artesian wells. The rents will range from 7s. 6d. per week for three rooms to 11s. 6d. for five. The total cost of the estate is set down at £120,000. A portion of the site is reserved as a recreation area and children's playground.

## A FERRO-CONCRETE FLOOR TEST.

ON Thursday last at Messrs. Whitbread & Co.'s stores at Tottenham a test was made with a new ferro-concrete floor which has just been erected. The floor is about 110ft. long and has a span of 25ft. 9in. It has been constructed by Messrs. Cubitt & Co. on the Hennebique patent system (of which Mr. L. G. Mouchel is the representative in this country), according to the instructions of the architect, Mr. Arthur Dixon. Transverse concrete beams, 22in. by 14in., are spaced at centres of 11ft. 2in. for the whole length of the floor, and above them is the floor proper, of concrete 5in. thick, with beams 5in. by 9in. running longitudinally across the bays, four across the width. In the large beams two rows of 1in. best English steel rods are embedded, a straight row of four rods at the bottom, and a row of four at the top which dip down to meet the lower row at the centre, where the greatest bending moment is. These rods are held in metal stirrups which hook into the concrete at the top. Tension rods are embedded in the floor proper and in the beams across the bays, the rods in the former being alternately at the top and bottom, spaced at $6\frac{1}{2}$in. centres. By this arrangement the shearing stress is taken by the stirrups, the tension by the steel rods and all compression by the concrete. The concrete was made in the proportion of 5 to 1—1yd. of washed ballast to $\frac{1}{2}$yd. of washed pit sand and 6 cwt. of Portland cement. In the whole floor there is about $2\frac{1}{2}$ per cent. of metal. The test consisted in loading a portion of the floor with bags of ballast and measuring the deflection with instruments. The following was the result:—

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Load in tons - - - | 20 | 30 | 40 | 50 | 70 | 80 | 86 |
| Deflection in millimetres | ·60 | ·95 | 1·20 | 2·5 | 3·60 | 4·40 | 4·80 |

So that with a load of 86 tons, equal to 6 cwt. per sq. ft., there was a gross deflection in the centre of the 25ft. 9in. beam of only 4·80 mm. (about $\frac{3}{16}$in.), which it would regain in about 12 hours. The floor is intended to carry a maximum load of 4 cwt. per sq. ft. The test thus proves the wonderful rigidity of a floor constructed on this system.

# Keystones.

**A new Fire Station at Deptford** is being erected in Evelyn Street at an estimated cost of £10,350.

**St. George's Hall, Liverpool.** — Mr. T. Stirling Lee has now completed a series of bas-reliefs in St. George's Hall, and has received a further commission to execute statues to be placed on the pedestals above in the spaces between the square columns.

**The Society of Arts** have presented their Albert Medal to Sir Charles Augustus Hartley, "in recognition of his services, extending over forty years, as engineer to the International Commission of the Danube, which have resulted in the opening up of the navigation of that river to the ships of all nations."

**St. John's College, Battersea.**—The further development of the scheme of enlargement for St. John's College, Battersea, is to be undertaken, and Mr. A. H. Ryan-Tenison, F.R.I.B.A, 12, Little College Street, Westminster, has received instructions to proceed with the first section at once. The total outlay will be between £3,000 and £4,000.

**In the Competition for the Carnegie Free Library at Taunton** eighty-one designs were submitted, and they will be on exhibition at the Municipal Hall this week from 12 till 7. The assessor, Mr. J. S. Gibson, has awarded the first premium to Mr. A. Colbourne Little, of 9, Gray's Inn Square, London (No. 51); the second to Mr. J. Lindsay Grant, of 2, St. Peter's Square, Manchester (No. 29); and the third premium to Mr. Henry A. Crouch, 12, Gray's Inn Square, London (No. 42).

**Euston Hall, Suffolk,** the seat of His Grace the Duke of Grafton, K.G., which was almost entirely destroyed by fire in the spring of last year, is being rebuilt. Externally the general lines and character of the old building are to be maintained, but internally the arrangements have been remodelled to meet present-day requirements. The works are being carried out by Mr. Thomas Heath, of London and Towcester, under the directions of Mr. W. H. Atkin Berry, F.R.I.B.A., of the firm of Kidner & Berry, London.

**Mr. Alfred Baker,** for more than four years past the manager of the London County Council tramways, has accepted the offer of a similar post in the city of Birmingham. The tramways of Birmingham are in a state of transition. After much controversy the lines in the city and its suburbs are about to be taken over by the municipality, and there is a good deal of work to be done in the electrification of the present steam routes and in other directions. Previous to employment with the London County Council Mr. Baker was manager of the Nottingham Tramways.

**The Belfast City Hall,** at the centre of Donegall Square, is finished externally, and the interior decoration and furnishing are to be completed early in 1905, when the hall is to be opened. The building is designed in Classic Renaissance style, with a principal façade of over 300ft., with the great pediment at the centre, in which the sculpture descriptive of Hibernia encouraging the local industries of shipbuilding and linen manufacture is to be executed by Mr. Pomeroy, who has also been commissioned to execute the statue of Lord Dufferin to stand in the grounds. Above this the peristyled dome, rising to a height of 175ft., forms the crowning feature of the architectural composition. The façades, both to the exterior and to the courtyard, are in Portland stone, and the interior fittings are of various hardwoods. The principal entrance hall under the dome and the grand staircase are to be executed in Greek and Italian marbles. The expenditure on the building will be £250,000.

**A Carnegie Free Library at Brentford** is being erected in Clifden House grounds. Mr. Nowell Parr is the architect.

**New County Hall at Northallerton.**—The foundation-stone of this building was laid last Wednesday. Mr. W. H. Brierley is the architect. The contract is for £25,000, but with furnishing, &c., the expenditure will probably be about £35,000.

**Mr. A. H. Ryan-Tenison, F.R.I.B.A.,** of 12, Little College Street, Westminster, has received instructions from the council of Sir Walter St. John's Schools, Battersea, to carry out important alterations and improvements to their schools.

**New Suburban Town.**—A co-operative society which has been formed at Plumstead has just acquired 150 acres on the Bostal Heath Estate, on which a new town is to be erected. There will be altogether 3,500 houses laid out in streets.

**The Architectural Grand Prix de Rome** has been won by M. Léon Jaussely (pupil of MM. Daumet and Esquié), the second prizes being gained by M. Wielhorski (pupil of M. Laloux) and by M. Henri Joulie (pupil of M. Pascal). M. Jaussely was born in 1875, M. Wielhorski in 1874, and M. Joulie in 1877.

**A Chancel Screen at Milverton Church** has been erected by Messrs. Harry Hems & Sons, of Exeter. The screen is exactly 20ft. long, and stands 13ft. 6in. high up to the cornice. The screen itself is in the fifteenth-century style of Perpendicular Gothic. Into the lower parts are introduced a number of old fifteenth-century panels from other parts of the church.

**The Newport Sanatorium at Allt-yr-yn** has been enlarged by the erection of a new pavilion. The additions provide for twenty-two beds, and consist of an extension of the existing administrative block and a new ward pavilion, carried out at a cost of £10,145. The contractors were Messrs. A. S. Morgan & Co., of Newport. Mr. R. H. Haynes, the borough engineer, was the architect.

**Manchester Royal Infirmary.**—The Board of Management of the Manchester Royal Infirmary have approved the following names of twelve architects selected (out of fifty-six names submitted) by the Building Committee, on the recommendation of the assessor, to prepare plans in competition for the new infirmary:—H. Percy Adams, London; Campbell, Douglas & Paterson, Glasgow; Edwin T. Hall & John Brooke, London; W. Cecil Hardisty, Manchester; Heathcote & Sons, Manchester; Henman & Cooper, Birmingham; John W. Simpson, London; Thomson & Sandilands, Glasgow; A. Hessell Tiltman, London; Waddington, Son & Dunkerley, Manchester; Thomas Worthington & Son, Manchester; Young & Hall, London. The building is to be erected at Stanley Grove.

**The Statues in Westminster Hall.**—In the House of Commons last week Mr. Plummer asked the First Lord of the Treasury whether the Government would consider the question of commissioning a sculptor to execute a statue of Queen Victoria to be placed in Westminster Hall, in continuation of the series of other statues already there. Mr. Lee asked whether the right hon. gentleman would consider the advisability of removing from Westminster Hall the whole of the statues now there, as he was informed that they were neither portraits nor works of art. Mr. Balfour said it was perfectly true the statues were not portraits, because they had all been made in the course of the last thirty years. "The Government are of opinion that, if there is to be a series of statues of Sovereigns of Great Britain in Westminster Hall, it is well worthy of consideration whether a statue of her late Majesty should not be added."

# Complete List of Contracts Open.

| DATE OF DELIVERY. | WORK TO BE EXECUTED. | FOR WHOM. | FROM WHOM FORMS OF TENDERS MAY BE OBTAINED. |
|---|---|---|---|
| | **BUILDING:** | | |
| Aug. 6 | Armagh—Alteration, &c., to Asylum | Management Committee | G. R. Lawless, Resident Medical Supt., Lunatic Asylum, Armagh. |
| „ 6 | Rhostyllen—School | Bersham School Board | T. Morris, 7, Argyle Street, Wrexham. |
| „ 6 | St. Agnes—Offices, &c. | ——— | S. Hill, Architect, Green Lane, Redruth. |
| „ 6 | Waterloo—Shelter, &c. | Urban District Council | F. S. Yates, Council's Surveyor, Town Hall, Waterloo. |
| „ 6 | Ynysybwl—Chapel | English Wesleyans | A. O. Evans, Pontypridd. |
| „ 6 | Ballee, Downpatrick—Vestry and Porch | Churchwardens | Rector, Ballee, Downpatrick. |
| „ 6 | Dublin—Rebuilding Premises | Mrs. Holmes | G. T. Moore, 184 Great Brunswick Street, Dublin. |
| „ 7 | Embleton—Chapel, &c. | ——— | Mr. Allinson, Bassenthwaite Lake Station. |
| „ 7 | Grimsby—Residence | ——— | H. C. Scaping, Architect, Court Chambers, Grimsby. |
| „ 7 | Scotswood, near Benwell, Northumberland—Improvement at Works. | Benwell and Fenham U.D.C. | W. P. Pattison, Surveyor, Council Offices, Benwell. |
| „ 7 | Cemaes, Anglesea—Coastguard Station | Admiralty | Director of Works Dpt., 21 Northumberland Avenue, London, W.C. |
| „ 7 | Crewe—Post Office | Commissioners of H.M. Works, &c. | Secretary, H.M. Office of Works, &c., Storey's Gate, S.W. |
| „ 7 | Bridgend—Infirmary | Guardians | P. J. Thomas, Architect, Bridgend. |
| „ 7 | Thornton Heath—Sorting Office | Commissioners of H.M. Works, &c | Secretary, H.M. Office of Works, &c., Storey's Gate, S.W. |
| „ 7 | Faversham, Kent—Police Stations, &c. | County Council | County Surveyor, 86 Week Street, Maidstone. |
| „ 7 | Ashford, Middlesex—Renewals of Roofing, &c. | W. London District School Mngrs. | F. G. Beeching, Clerk to Managers, Ashford, Middlesex |
| „ 8 | Ulverston—Alterations, &c., to Hospital | ——— | J. W. Grundy & Son, Archts., Central Bdgs., Brogden St., Ulverston. |
| „ 8 | Londonderry—Cottages | Rural District Council | J. J. S. Barnhill, 1A Strand, Londonderry. |
| „ 8 | Fermoy, Ireland—Residence | ——— | W. H. Hill & Son, 28 South Mall, Cork. |
| „ 8 | Cardiff—Wagon Shops | Gloucester Railway Carriage & Wagon Co., Ltd. | J. H. Phillips, Architect, Clive Chambers, Windsor Place, Cardiff. |
| „ 9 | Gwinear—Farm Buildings, &c. | J. S. Spry | S. Hill, Architect, Green Lane, Redruth. |
| „ 10 | Pontnewynydd—Forty Houses | Grove Estate Building Club | Fisher & Sons, Architects, Club Chambers, Pontypool. |
| „ 10 | Preston—Bridge | Lancs County Council | W. C. Hall, County Bridgemaster, County Offices, Preston. |
| „ 10 | Sunderland—Vicarage | Rev. L. D. Williams | J. Potts & Son, 57 John Street, Sunderland. |
| „ 10 | Edwardsville, Wales—Vestry | Church Trustees | W. Dowdeswell, Architect, Bryntaff, Treharris, R.S.O. |
| „ 10 | Exeter—Bank Building | Directors of Prescott's Bank, Ltd. | E. H. Harbottle & Son, Architects, County Chambers, Exeter. |
| „ 10 | Goldthorpe, Bolton-upon-Dean—Wall | Urban District Council | Surveyor, Council Offices, Goldthorpe. |
| „ 10 | Swansea—Bricks | Corporation | Engineer, Waterworks, Swansea. |
| „ 11 | Glasgow—Extension of Workshops, &c. | Corporation | Sinclair & Ballantyne, 95 Bath Street, Glasgow. |
| „ 11 | Langley, Moor—Club Buildings | Social Club and Institute Committee. | F. Smith, Architect, Brancepeth. |
| „ 12 | Homerton, N.E.—Scullery | Hackney Union Guardians | W. A. Finch, 76 Finsbury Pavement, E.C. |
| „ 12 | Glasgow—Tenements | Corporation | City Engineer, 64 Cochrane Street, Glasgow. |
| „ 13 | Eskdale—Farm Buildings | ——— | J. H. Rea, Gatehouse, Eskdale. |
| „ 13 | Penarth—School | U.D. School Board | G. A. Birkenhead, Caledonian Chambers, Cardiff. |
| „ 13 | Rastrick—Stabling, &c. | J. Ainley & Sons, Ltd. | J. Berry, 3 Market Place, Huddersfield. |
| „ 15 | Kidwelly, Wales—Chapel | Church Trustees | J. Anthony & Sons, Coal Merchants, Anchor House, Kidwelly, Wales. |
| „ 15 | Epsom—Depot, &c | Urban District Council | E. R. Capon, Surveyor, Council Offices, Bromley Hurst, Epsom. |
| „ 17 | Cheadle—Tramway Works | Cheadle and Gatley U.D.C. | C. R. Brady, 13 Warren Street, Stockport, |
| „ 17 | Newchurch, near Warrington—Rebuilding Church | ——— | Travers & Ramsden, 44 Church Street, Leigh, Lancs. |
| „ 18 | Portsmouth—Portland Cement, &c. | Corporation | A. Hellard, Town Clerk, Town Hall, Portsmouth. |
| „ 18 | Ilford—Post-Office | Commissioners of H.M. Works, &c. | Secretary, H.M. Office of Works, Storey's Gate, S.W. |
| „ 19 | Llandilofawr, Wales—Organ-Chamber, &c. | ——— | D. Jenkins, Architect, Llandilo. |
| „ 20 | Epsom, Surrey—Foundations of Asylum | London County Council | R. W. Partridge, 6 Waterloo Place, London, S.W. |
| „ 21 | Colwyn Bay—Hospital, &c. | Urban District Council | W. Jones, Engineer, Council Offices, Station Road, Colwyn Bay. |
| „ 26 | Troedyrhiw—School | Merthyr Tydfil School Board | J. Ll. Smith, Board's Architect, Aberdare. |
| „ 26 | Leicester—Enlargement of Head Post-Office | Commissioners of H.M. Works, &c. | Secretary, H.M. Office of Works, Storey's Gate, S.W. |
| „ 31 | New Malden—Offices, &c. | Maldens and Coombe U.D.C. | W. Hope, Architect, Seymour Road, Hampton Wick. |
| „ 31 | Bristol—Warehouses | Docks Committee | W. W. Squire, Engineer, Underfall Yard, Cumberland Rd., Bristol. |
| No date. | Seedley, Salford—School | Salford Education Committee | L. C. Evans, Town Clerk, Town Hall, Salford. |
| „ | St. Osyth—Residence | Mrs. F. J. Flower | G. Gardiner, Architect, Marine Parade, Clacton-on-Sea. |
| | **ENGINEERING:** | | |
| Aug. 6 | Portland Bill, Dorset—Lighthouse, &c. | ——— | Principal Keeper, Low Lighthouse, Portland, Dorset. |
| „ 6 | Salford—Steel Doors | ——— | W. H. Hunter, 41 Spring Gardens, Manchester. |
| „ 7 | Cromer—Reservoir | Urban District Council | J. C. Mellis, 264 Gresham House, Old Broad Street, London, E.C. |
| „ 7 | Hawarden—Shaft | Queensferry Colliery Co., Ltd. | Secretary, Queensferry Colliery Co., Ltd., Hawarden, near Chester. |
| „ 7 | Chatham—Timber Landing Stage | Corporation | A. T. Walmisley, 9 Victoria Street, Westminster, S.W. |
| „ 7 | Burntisland, Scotland—Jetty | Harbour Commissioners | R. Henderson, 5 High Street, Burntisland. |
| „ 8 | Gijon, Spain—Port Works | ——— | Ministry of Agriculture &c., and Public Works, Madrid. |
| „ 8 | Accrington—Cold-air Store | Town Hall & Markets Committee | Borough Engineer, Town Hall, Accrington. |
| „ 8 | Boyle, co. Roscommon, Ireland—Waterworks | No. 1 Rural District Council | J. H. M'Swiney, Engineer, Avenue Chambers, Belfast. |
| „ 8 | Baltinglass, Ireland—Electric Bells | Guardians | J. R. Dagg, Clerk, Workhouse, Baltinglass. |
| „ 10 | Brighton—Electricity Meters | Town Council | F. J. Tillstone, Clerk, Town Hall, Brighton. |
| „ 10 | Waterleat—Bridge | Ashburton Urban Dist. Council | Council's Surveyor, St. Lawrence Lane, Ashburton. |
| „ 10 | Rochdale—Tramcars, &c. | Corporation | Lacey & Sillar, 2 Queen Anne's Gate, Westminster. |
| „ 10 | Birmingham—Bacteria Beds, &c. | Tame & Rea District Drainage Bd. | J. D. Watson, Board's Engineer, Tyburn, near Birmingham. |
| „ 10 | Kettering—Embankment &c. | Urban District Council | T. R. Smith, Council's Engineer, Market Place, Kettering. |
| „ 10 | Glasgow—Two Ferryboats | Clyde Navigation Trustees | G. H. Baxter, Engineer, Clyde Trust Works, Dalmuir. |
| „ 10 | Trapani Italy—Port Works | Italian Ministry of Public Works | Commercial Intelligence Branch, Board of Trade, 50 Parliament Street, S.W. |
| „ 11 | London, S.W.—Switchboards | London County Council | Clerk, County Hall, Spring Gardens, S.W. |
| „ 11 | Shrivenham and Uffington—Widening Line | Great Western Railway Co. | Engineer, Paddington Station, N.W. |
| „ 11 | Middleton, Lancs—Grease Extractor | Corporation | S. Pauls, Borough Electrical Engineer, Town Hall, Middleton. |
| „ 12 | Levenshulme—Culvert | Urban District Council | J. Jepson, Surveyor, Guardian Chambers, Tircot Dale, Stockport. |
| „ 12 | Spalding—Widening Drain | Deeping Fen-Drainage Trustees | A Harrison, Superintendent, Little London, Spalding. |
| „ 15 | Northampton—Electrical Plant, &c. | Corporation | A. Fidler, Borough Engineer, Guildhall, Northampton. |
| „ 15 | Boskoop, Holland—Acetylene Plant | Town Council | P. A. Ottalander, Council Offices, Boskoop, Holland. |
| „ 18 | Lyndhurst—Sewage Disposal Works | New Forest Rural District Council | Combes & Bennett, Engineers, Midland Bank Chbrs., Southampton. |
| „ 18 | Victoria, Australia—Telephone Cable | ——— | Deputy Postmaster-General, General Post Office, Melbourne. |
| „ 18 | Portsmouth—Dredging, &c. | Corporation | A. Hellard, Clerk, Town Hall Portsmouth. |
| „ 19 | Port Adelaide—Railway Materials | ——— | Chief Mechanical Engineer, Islington, South Australia. |
| „ 19 | Maesteg, Wales—Waterworks | Urban District Council | J Humphreys, Council's Engineer, Town Hall Chambers, Maesteg. |
| „ 20 | Emden, Belgium—Four Dredger Boats | Königliche Wasserbau Inspection | M. Van Jindelt, Bausecretär, Emden. |
| „ 20 | Gerona, Spain—Telephone System | ——— | Directorate-General of Posts and Telegraphs, Carretas 10, Madrid. |
| „ 21 | Chartham Downs, Canterbury—Extension of Fire Mains | Asylums Committee | W. J. Jennings, 4 St. Margaret Street, Canterbury. |
| „ 21 | Rotherham—Boiler | Sewerage Committee | R. E. W. Berrington, Engineer, Bank Buildings, Wolverhampton. |
| „ 22 | Newton in-Makerfield—Ferro-concrete Reservoir | Urban District Council | C. Cole, Clerk, Town Hall, Earlestown, Lancs. |
| „ 22 | Avila, Spain—Electric Power Plant | ——— | Secretariat of the "Ayuntamiento," Avila, Spain. |
| „ 25 | Clutton—Waterworks | Rural District Council | W. F. Bird, Engineer, Midsomer Norton, near Bath. |
| „ 26 | Charleroi-Nalinnes, Belgium—Railway | Société Nationale des Chémins de Fer Vicinaux. | Director-General, 14 Rue de la Science, Brussels. |
| „ 28 | Apulia, Italy—Aqueduct | ——— | Commercial Intelligence Branch, Board of Trade, 50 Parliament Street, S.W. |
| „ 29 | Devonport—Gasholder | Corporation | S. E. Stevenson, Engineer, Gasworks, Devonport. |
| „ 31 | Belfast—Graving Dock | Harbour Commissioners | G. F. L. Giles, Engineer, Harbour Office, Belfast. |
| Sept. 1 | Hounslow—Fire Engine | Urban District Council | H. J. Baker, Clerk, Town Hall, Hounslow. |
| „ 2 | Corrientes—Waterworks | ——— | Engineer-in-Chief, Rividavia 1,255, Buenos Aires. |
| „ 8 | Dixmude-Ypres-Paperinghe—Railway | Société Nationale des Chemins de Fer Vicinaux. | Director-General, 14 Rue de la Science, Brussels. |
| „ 12 | Sydney—Electric Tramway Generating Set | Railway Commissioners | Agent-General for New South Wales, 9 Victoria Street, S.W. |
| „ 23 | Estremoz-Castello de Vide—Railway | Portugal State Railways | Sessions Hall of the Council of Administration of State Railways, Lisbon. |
| „ 28 | Launceston, Tasmania—Electric Meters | ——— | J. Terry & Co., 7 Great Winchester Street, E.C. |
| Oct. 1 | Utrecht, Netherlands—Electricity Supply Station | Town Council | Gemeente-Secretaire of Utrecht. |
| „ 6 | London, S.E.—Steam Engines | London County Council | County Hall, Spring Gardens, S.W. |
| „ 30 | Marina, Upper Barracca, Malta—Lift | Crown Agents for the Colonies | Receiver-General and Director of Contracts, Valletta, Malta. |
| Dec. 15 | Los Andes, Chili—Railway | ——— | Commercial Intelligence Branch, Board of Trade, 50 Parliament Street, S.W. |
| | **FURNITURE:** | | |
| Aug. 10 | Southall—Furnishing at Sanatorium | Southall-Norwood Urban District Council. | A. L. Houlder, Clerk, Council Offices, Southall. |
| „ 10 | Kingston-on-Thames—Blinds | Guardians | Steward, Infirmary, London Road, Kingston Hill, Kingston. |
| „ 23 | Burnley—Furnishing Schools | ——— | A. J. Shaw & T. H. Vowles, Architects, Mercantile Chmbrs., Burnley. |

365) 12000 ( 32
1095
1050
730
200

# Complete List of Contracts Open – *continued*

| DATE OF DELIVERY. | WORK TO BE EXECUTED. | FOR WHOM. | FROM WHOM FORMS OF TENDERS MAY BE OBTAINED. |
|---|---|---|---|
| | **IRON AND STEEL:** | | |
| Aug. 7 | Chatham—Iron and Steelwork | Corporation | A. T. Walmisley, 9 Victoria Street, Westminster. |
| „ 10 | Muswell Hill, N.—Iron Fencing | Hornsey Urban District Council | E. J. Lovegrove, 99 Southwold Lane, Highgate, N. |
| „ 10 | Dublin—Cast-iron Chairs | Great Northern Rly. Co. (Ireland) | T. Morrison, Secretary, Amiens Street Terminus, Dublin. |
| „ 10 | London, N.—Wrought-iron Railing | Hornsey Urban District Council | E. J. Lovegrove, 99 Southwood Lane, Highgate, N. |
| „ 11 | London, W.—Girder Work | Great Western Railway Co. | Engineer, Paddington Station, N.W. |
| „ 18 | Portsmouth—Ironmongery, &c. | Corporation | A. Hellard, Clerk, Town Hall, Portsmouth. |
| | **PAINTING AND PLUMBING:** | | |
| Aug. 6 | Upper Holloway, N.—Painting Infirmary | Guardians | W. Smith, 65 Chancery Lane, W.C. |
| „ 6 | London, E.—Painting, &c., Workhouse | Stepney Union Guardians | Master, Workhouse, St. Leonard's Street, Bromley-by-Bow, E. |
| „ 7 | Chatham—Painting, &c., Pier | Corporation | A. T. Walmisley, 9 Victoria Street, Westminster, S.W. |
| „ 7 | Halifax—Painting | Industrial Society, Ltd. | A. B. Carter, Secretary, General Office, Weymouth Street, Halifax. |
| „ 8 | Colchester—Cleaning-down, &c. | Markets Committee | H. Goodyear, Borough Engineer, Town Hall, Colchester. |
| „ 10 | Hull—Painting Homes | Sculcoates Union Guardians | T. B. Atkinson, 11 Trinity House Lane, Hull. |
| „ 10 | Norwich—Painting Workhouse | Guardians | Morgan & Buckingham, Architects, Redwell Street, Norwich. |
| „ 11 | Nottingham—Painting, &c. to Market | Markets and Fairs Committee | F. B. Lewis, City Architect, Guildhall, Nottingham. |
| „ 15 | Crewe—Painting | Electric Lighting Committee | H. H. Denton, Corporation Electricity Works, Edleston Rd., Crewe. |
| „ 17 | Mansfield—Painting, &c. | Corporation | R. F. Vallace, White Hart Chambers, Mansfield. |
| „ 18 | Portsmouth—Oils and Paints | Corporation | A. Hellard, Clerk, Town Hall, Portsmouth. |
| | **ROADS AND CARTAGE:** | | |
| Aug. 6 | Aberdeen—Forming, &c. | Land Association, Ltd. | Walker & Duncan, Civil Engineers, Aberdeen. |
| „ 6 | Thames Ditton – Construction of Roads, &c. | —— | C. & F. Rutley, 11 Dowgate Hill, E.C. |
| „ 6 | Portland—Granite | Urban District Council | R. S. Henshaw, Engineer, Council Offices, New Road, Portland |
| „ 6 | Wealdstone—Improvement Works | Urban District Council | H. Walker, Surveyor, Council Offices, Wealdstone. |
| „ 7 | Dewsbury—Forming Roads, &c. | Joint Hospital Board | Holton & Fox, Architects, Corporation Street, Dewsbury. |
| „ 7 | Ticehurst—Steam Rolling | Rural District Council | J. C. L. Andrews, Clerk, Council Offices, Wadhurst, Sussex. |
| „ 7 | Brighton—Granite Kerb | Town Council | F. J. C. May, Borough Engineer, Town Hall, Brighton. |
| „ 7 | Brighton—Granite Spalls | Town Council | F. J. C. May Borough Engineer, Town Hall, Brighton. |
| „ 8 | Dittisham—Reconstruction of Path | Parish Council | J. Hillyer, Chairman, Council Offices, Dittisham. |
| „ 8 | Blaengwynfi, Wales—Street Improvement Works | Urban District Council | W. P. Jones, Surveyor, Council Offices, Cymmer, Port Talbot. |
| 10 | Ince, Lancs—Setts | Urban District Council | A. T. Swain, Surveyor, Council Offices, Ince Green Lane, Ince. |
| „ 10 | Hitchin—Granite | Urban District Council | Clerk, Council Offices, Hitchin. |
| „ 12 | Dartford—Road | Urban District Council | Town Surveyor, Council Offices, Dartford. |
| „ 17 | Cheadle—Tramways Works | Cheadle and Gatley U.D.C. | C. R. Brady, 13 Warren Street, Stockport. |
| „ 17 | Barnet—Granite, &c | Urban District Council | H. W. Poole, Clerk, 40 High Street, Barnet. |
| „ 18 | Portsmouth—Gravel, Paving, Granite, &c. | Corporation | A. Hellard, Clerk, Town Hall, Portsmouth. |
| „ 18 | Mountain Ash, Wales—Materials, &c. | Urban District Council | Borough Engineer, Town Hall, Macclesfield. |
| „ 24 | Stevenage—Levelling, &c. | Urban District Council | W. O. Times, Clerk, Council Offices, Orchard Road, Stevenage. |
| | **SANITARY:** | | |
| Aug. 7 | Bridgend—Draining Workhouse | Board of Guardians | P. J. Thomas, Architect, Bridgend. |
| „ 10 | London, N.—Construction of Sewers | Hornsey U.D.C. | E. J. Lovegrove, 99 Southwold Lane, Highgate, N. |
| „ 10 | Cudworth—Sewers | Urban District Council | Fairbank & Son, Lendal Chambers, York. |
| „ 13 | Castletown, Ireland—Sewerage Works | Rural District Council | R. Evans, 53 South Mall, Cork. |
| „ 15 | Cudworth—Scavenging | Urban District Council | W. E. Raley, Clerk, Barnsley. |
| „ 15 | Tadcaster—Sewers, &c. | Rural District Council | F. Massie, Engineer, Tetley House, Wakefield. |
| „ 17 | Mansfield—Sewage-Disposal Works | Town Council | R. F. Vallance, Borough Surveyor, Mansfield. |
| 17 | Wilton, Wilts—Sewers, &c. | Rural District Council | Lemon & Blizzard 38 Silver Street, Salisbury. |
| „ 18 | Leatherhead—Sewers, &c. | Urban District Council | T. Salkfield, Engineer, Council Offices, Leatherhead. |
| „ 18 | Portsmouth—Drain Pipes, &c. | Corporation | A Hellard, Town Clerk, Town Hall, Portsmouth. |
| „ 18 | Lyndhurst—Sewage-Disposal Works | New Forest R.D.C. | Combes & Bennett, Engineers, Midland Bank Chambers, Southampton. |
| „ 26 | Strood, Kent—Storm-Water Drainage Works | Rural District Council | W. Brooke, Surveyor, Council Offices, Strood. |
| | **TIMBER:** | | |
| Aug. 10 | London, N.—Oak Pale Fencing | Hornsey U.D.C. | E. J. Lovegrove, 99 Southwood Lane, Highgate, N. |
| „ 12 | London, S.W.—Timber | Egyptian State Railways | Lieut.-Col. Western, Broadway Chambers, Westminster, S.W. |
| „ 18 | Portsmouth—Timber | Corporation | A. Hellard, Town Clerk, Town Hall, Portsmouth. |

# List of Competitions Open.

| DATE OF DELIVERY. | DESIGNS REQUIRED. | AMOUNT OF PREMIUM. | DEPOSIT REQUIRED FOR CONDITIONS, &c. | BY WHOM ADVERTISED. |
|---|---|---|---|---|
| Aug. 31 | Blackpool—New Offices | —— | £1 1s. | C. Arthur, 34 Victoria Street, Blackpool. |
| Sept. 12 | Stonehaven, Scotland—Alterations and Additions to Town Hall. | —— | —— | G. Murdoch, Borough Surveyor, Stonehaven. |
| 12 | Howden, Yorks—Sewerage Improvement | £15 and commission. | —— | H. Green, Clerk, Council Offices, Howden. |
| „ 14 | Heywood—Library | £30, £20, £10. | —— | J. A. Settle, Borough Engineer, Municipal Buildings, Heywood. |
| Oct. 2 | Bromley, E.—Public Library | £75, £25. | 10s. 6d. | H. Heckford, Borough Surveyor, Council Offices, High Street, Poplar. |
| „ 12 | Rawtenstall—Free Library, &c. | £100, £50, £30. | £2. | A. W. Lawson, Borough Surveyor, Municipal Offices, Rawtenstall. |
| 1904. Mar. 31 | Vienna—Machinery to Lift Boats on Canal | 100,000, 75,000 and 50,000 kronen. | —— | Austro-Hungarian Consulate-General, 22 Laurence Pountney Lane, E.C. |
| No date | Gillingham—School | —— | —— | E. T. Atchison, 8 Waterloo Road, New Brompton, Kent. |

# Current Market Prices.

## FORAGE.

| | | £ | s. | d. | £ | s. | d. |
|---|---|---|---|---|---|---|---|
| Beans | per qr. | 1 | 9 | 6 | 1 | 11 | 9 |
| Clover, best | per load | 4 | 7 | 6 | 4 | 15 | 0 |
| Hay, best | do. | 3 | 15 | 0 | 4 | 10 | 0 |
| Sanfoin mixture | do. | 3 | 15 | 0 | 4 | 5 | 0 |
| Straw | do. | 1 | 10 | 0 | 2 | 2 | 0 |

## OILS AND PAINTS.

| | | £ | s. | d. | £ | s. | d. |
|---|---|---|---|---|---|---|---|
| Castor Oil, French | pet cwt. | 1 | 1 | 10 | 1 | 2 | 2 |
| Colza Oil, English | do. | 1 | 4 | 0 | | — | |
| Copperas | per ton | 2 | 2 | 6 | | — | |
| Lard Oil | per cwt. | 2 | 15 | 0 | 2 | 17 | 0 |
| Lead, white, ground, carbonate | do. | 1 | 4 | 10 | | — | |
| Do red | do. | 1 | 0 | 4½ | | | |
| Linseed Oil, barrels | do. | 1 | 0 | 4½ | | — | |
| Petroleum, American | per gal. | 0 | 0 | 5⅛ | 0 | 0 | 6 |
| Do. Russian | do. | 0 | 0 | 4½ | 0 | 0 | 4⅝ |
| Pitch | per barrel | 0 | 8 | 0 | | — | |
| Shellac, orange | per cwt. | 6 | 19 | 0 | | — | |
| Soda, crystals | per ton | 3 | 2 | 6 | 3 | 5 | 0 |
| Tallow, Town | per cwt. | 1 | 8 | 3 | | — | |
| Tar, Stockholm | per barrel | 1 | 0 | 6 | | — | |
| Turpentine | per cwt. | 1 | 19 | 3 | | — | |

## METALS.

| | | £ | s. | d. | £ | s. | d. |
|---|---|---|---|---|---|---|---|
| Copper, sheet, strong | per ton | 71 | 0 | 0 | | — | |
| Iron, Staffs., bar | do. | 6 | 15 | 0 | | — | |
| Do. Galvanised Corrugated sheet | do. | 11 | 0 | 0 | 11 | 5 | 0 |
| Lead, pig, Soft Foreign | do. | 11 | 7 | 6 | | — | |
| Do. do. English common brands | do. | 11 | 12 | 6 | 15 | 0 | 0 |
| Do. sheet English 3lb. per sq. ft and upwards | do. | 14 | 0 | 0 | | — | |
| Do. pipe | do. | 15 | 0 | 0 | | — | |
| Nails, cut clasp, 3in. to 6in. | do. | 9 | 5 | 0 | | — | |
| Do. floor brads | do. | 9 | 0 | 0 | | — | |
| Steel, Staffs., Girders and Angles | do. | 5 | 10 | 0 | 6 | 7 | 6 |
| Do. do. Mild bars | do. | 6 | 7 | 6 | 7 | 2 | 6 |
| Tin, Foreign | do. | 125 | 15 | 0 | 126 | 5 | 0 |
| Do. English ingots | do. | 126 | 10 | 0 | 127 | 0 | 0 |
| Zinc, sheets, Silesian | do. | 26 | 0 | 0 | | - | |
| Do. do. Vielle Montaigne | do. | 26 | 5 | 0 | | — | |
| Do. Spelter | do. | 20 | 7 | 6 | | — | |

## TIMBER.

### Soft Woods.

| | | £ | s. | d. | £ | s. | d. |
|---|---|---|---|---|---|---|---|
| Fir, Dantzic and Memel | per load | 1 | 13 | 0 | 3 | 0 | 0 |
| Pine, Quebec, Yellow | do. | 5 | 5 | 0 | 6 | 5 | 0 |
| Do. Pitch | do. | 2 | 12 | 0 | 3 | 3 | 0 |
| Laths log, Dantzic | per fath. | 4 | 10 | 0 | 5 | 10 | 0 |
| Do. Petersburg | do. | 7 | 5 | 0 | | — | |
| Deals, Kovda, 3rd Yell. 3×9 | per load | 13 | 15 | 0 | | — | |
| Do. Sundsvall, Yellow, 5th, 3×9 | do. | 4 | 10 | 0 | | — | |
| Do. Miramichi, Spruce, 1st, 3×7 | do. | 7 | 15 | 0 | | — | |
| Do. do. do. 2nd, 3×5 | do. | 7 | 15 | 0 | | — | |
| Do. do. do. 3rd, 3×7 | do. | 7 | 15 | 0 | | — | |
| Do. Dalhousie, Unsorted Spruce, 3×7 | do. | 7 | 15 | 0 | | — | |
| Do. Umba, Dry Yellow, 2nd, 3×11 | do. | 15 | 15 | 0 | | — | |
| Do. Ljusne, Yellow, 4th, 2½×7 | do. | 10 | 10 | 0 | | — | |
| Do. Onega, White, 3rd, 3×11 | do. | 9 | 5 | 0 | | — | |
| Do. do. do. do. 3×9 | do. | 9 | 5 | 0 | | — | |
| Do. Narva, White, 4th, 3×11 | do. | 6 | 17 | 6 | | — | |
| Do. Bonaventure River, Unsorted Spruce 3×11 | do. | 8 | 15 | 0 | | — | |
| Do. do. do. 3×7 | do. | 7 | 10 | 0 | | — | |
| Do. Archangel, Yellow, 4th, 3×9 | do. | 10 | 10 | 0 | | — | |
| Do. Gefle and Sardarne, Yellow, 5th, 3×9 | do. | 11 | 5 | 0 | | — | |

# Trade and Craft.

### Mouldings and High-Class Joinery.

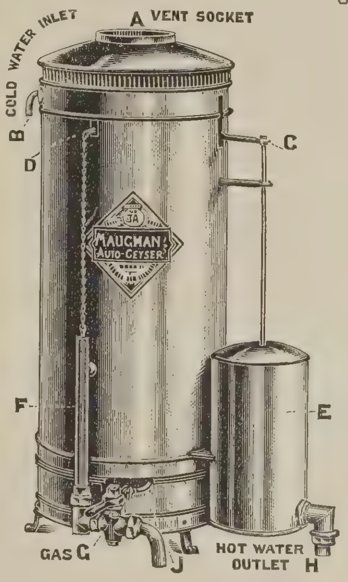
The new catalogue issued by Messrs. Samuel Elliott & Sons, Ltd., of Caversham, Reading, contains more than fifteen hundred different mouldings for architraves, cornices, picture rails, dado cappings, skirtings, hand rails, &c., a selection extensive enough to meet every requirement; though the firm state that any section may be altered without extra charge, provided that the size of material is not increased. The sections are drawn full size, a great convenience. It is opportune to note that Messrs. Samuel Elliott & Sons have established new works at Caversham, consisting of offices, well-arranged workshops (lighted throughout by electricity) and large sheds for the storage of timber, the whole covering about six acres of ground on the bank of the Thames, within a short distance of the G.W., S.E. and S.W. railway stations. The buildings are very substantially brick built and arranged in the most convenient form for the rapid manufacture of high-class joinery, mouldings, turnery, and all kinds of woodwork. The plant and machinery are of the very best, and include all the latest mechanical improvements in every department. Mr. Samuel Elliott was the founder of the moulding and joinery works so successfully carried on by him at Newbury for many years. He has executed contracts under the most eminent architects (such as Mr. Norman Shaw, Mr. Alfred Waterhouse, Mr. John Belcher, Mr. Mervyn Macartney, and the late G. E. Street, Sir Gilbert Scott, J. F. Bentley, Henry Currey and J. M. Brydon), and gold and silver medals and diplomas have been won by him at exhibitions in Newbury, London, Paris, Cologne, Brussels, Brighton, York, Derby, Wolverhampton, Birmingham, Edinburgh, &c., for excellence in design and workmanship. His firm are also the patentees and manufacturers of "Elliott's Simplex Weather Bar" for casements opening inwards, as used at the Imperial Institute and many other important buildings.

### Door and Window Furniture.

The best catalogue of locks, latches, fasteners, &c., which we have yet seen has just been issued by Messrs. Colledge & Bridgen, of 67, Church Lane, Wolverhampton. It is most admirably illustrated from photographs and comprises a large selection of excellent designs. Various kinds of locks are shown—strong palace motion mortise locks, 2-bolt, hook-bolt and roller-bolt mortise locks, patent improved weighted mortise and rim locks specially adapted for schools, the "Securitas" patent check-action mortise lock (the check-action of which is operated by a master key that renders all other keys useless), &c.; as well as various rim latches and locks. Some of the designs for handles are particularly good, such as Nos. 4,341, 4,343 and 4,331; many excellent door knobs are also illustrated. The "Tudor" patent lock furniture dispenses with the objectionable small screw in the neck of the knob, the fastening consisting of a jointed grooved rose which gives an even bearing all round. A large number of lever lock handles and finger plates in brass and copper are illustrated; in fact, there are more than fifty different designs for the latter, some quite plain, others ribbed, fluted embossed, saw pierced and hand-hammered. There is a similar extensive variety of letter plates, door knockers, grip door handles, brass sash lifts and drawer pulls. The casement fasteners and stays include many new patterns. Other features are hat and coat hooks, antique ironwork, French casement bolts, and fanlight openers of various kinds. Altogether we must congratulate Messrs. Colledge & Bridgen on having produced an excellent catalogue, thoroughly up-to-date and comprehensive enough to suit every requirement: full of designs which are a vast improvement on what some firms persist in multiplying year by year. The designs in this catalogue show a respect for material which manufacturers should take to heart.

### Domestic Hot-Water Supply.

Geysers are one of the facilities of the century. They afford an abundant supply of hot water without the necessity for installing an expensive equipment of pipes and boiler. They are ready at any time of the day or night, are economical in working, and occupy little space. A geyser especially embracing these advantages is the "Maughan" auto-geyser, made by Messrs. Maughan's Patent Geyser Co., Ltd., of Holywell Row, Worship Street, London, E.C. The accompanying illustration shows the arrangement of its parts. It can be fitted in any part of the house above the taps to be supplied, and in operation it is perfectly simple. The drawing of hot water allows cold water to enter by means of a ball valve; the movement opens the gas supply and the gas is lit by the pilot jet. When the hot-water tap is shut the lower chamber of the auto-geyser fills and the ball valve shuts off the cold water, while the gas valve is released and falls by its own weight. The apparatus is therefore entirely automatic. A notable feature of the "Maughan" auto-geyser, and one which distinguishes it from other automatic gas heaters, is the absence of rubber or leather diaphragms or tubes in the mechanism. Apparatus which depend on these are certain to fail as soon as the material of which the valves are made begins to deteriorate. With the exception of the rubber seating of the ball valve (which is easily renewed if worn) the whole of the automatic arrangements are of copper or brass. The price of the auto-geyser ranges from £4 5s. to £10—size No. 3a, which is recommended for full-sized baths, heats 3½ gallons per minute and costs £8 in polished copper and £6 15s. in japanned galvanized iron.



MAUGHAN'S NEW AUTO-GEYSER.

### Up-to-Date Lifts.

It is noteworthy that the Midland Railway Co., before deciding upon the lift equipment of their new hotel at Manchester, made a careful investigation into the various systems, both in America and on the Continent, and finally placed the order for the whole of the nineteen express electric lifts with Messrs. Easton & Co., Ltd., of Broad Sanctuary Chambers, Westminster, and the Erith Ironworks, who have made a speciality of work of this description for many years. The lifts in question are of the electric direct-coupled type, which ensures a minimum consumption of current coupled with complete safety and a minimum cost in repairs. The express passenger lifts run at a speed of 300ft. per minute and carry twenty persons each through a travel of more than 100ft. These, like the luggage lifts, are fitted with Messrs. Easton & Co.'s latest type of patent car-switch controller. To operate this the attendant merely inserts a key in the side of the cage, by means of which the lift is started or stopped. The same key opens the gates on each floor. This controller also gives variable speed, a point of great importance in express lifts. The electric goods lifts are of similar design to the passenger lifts, except that they run at lower speeds. The electric service lifts are of the express type, and are operated in all cases by push-button controllers. By means of these up-to-date and patented devices, an attendant on any floor—by pushing a button—has complete control of the machinery and can call or send the lift to any desired point. The equipment of electric service lifts of this kind is of the utmost importance in modern hotels, as it ensures quick service and avoids danger of meals being cooled through delay in transit. The electric passenger, goods and service lifts are all fitted with patent interlocking gates, which are electrically connected to the controllers in such a way that no lift can be moved by the operator unless all gates are shut and locked. The passenger and goods lifts are also so arranged that no gate can be opened unless the lift car is opposite the floor, while the service lifts are fitted with locking gears so designed that, though an open door prevents the lift from moving, the closing of that door at once returns the lift either to the service point or to the kitchen, as may be desired, without any further action on the part of the attendant. Messrs. Easton & Co. have in past years designed and constructed the largest electric passenger lifts in the world, namely, those for the City and South London Railway, most of which carry one hundred persons each; as well as the highest electric passenger lifts in the world, namely, those of the New Brighton Tower, Liverpool, which run through a travel of 300ft. Messrs. Easton & Co. also construct the smallest electric lifts, manufactured in large quantities, and it is possible at the present time to purchase an electric service lift to carry a load of 1 cwt. for the sum of £70 or £80 complete, the cost of manufacture of the great machines mentioned above of course running to thousands of pounds per lift. The large lifts are fitted with duplex-action electric governors and also with mechanical governors, which, in the event of excessive speed, cut off the supply of current and apply brakes to the machine and safety gear to the car. Express electric passenger lifts manufactured by Messrs. Easton & Co. are to be found in hundreds of important hotels, banks, post-offices, insurance offices, Government buildings, hospitals, residential flats and private residences in England and abroad.

**The Strand Frontage.**—Coloured boards have now been placed in position along the northern side of the Strand, from Aldwych to Newcastle Street, showing the lines of frontage which have been suggested by Mr. Hamo Thornycroft, the Further Strand Improvement Committee, and the R.I.B.A. The blue and white line in the rear indicates the considerable modification of the original plan suggested by Mr. Thornycroft; the red line the proposal made by the R.I.B.A., with which Mr. Thornycroft has since expressed his agreement; the green line a suggestion made by the superintending architect of the Council, by which the average width of the Strand would be 115ft.; and the black line the frontage originally suggested by the Council.

## Builders' Notes.

**The late Mr. Benjamin Ebenezer Nightingale,** builder and contractor, of Albert Works, Albert Embankment, left property of the total value of £23,894 14s. 11d.

**From Manchester to Liverpool by Electric Car.**—The South Lancashire Electric Tramways Company are about to lay lines from Four Lane Ends, near Bolton, where their system at present terminates, through Little Hulton and Walkden to Swinton, joining the Manchester and Salford system. When the section, about 6 miles in length, is completed, it will be possible to travel from Manchester to Liverpool by electric car, a distance of over 40 miles. This will be the longest electric car route in England.

**London County Council.**—At last week's meeting the rebuilding of Lambeth Bridge came up for consideration. Lord Welby pointed out that the Council had on hand the Holborn-Strand Improvement and the Westminster Improvement, and the Bridges Committee was now spending £570,000 on Vauxhall Bridge and £1,500,000 on the Rotherhithe Tunnel, and yet the same Committee came to the Council for power to spend £860,000 more to build a bridge within a quarter of a mile of Vauxhall Bridge. The Council had to consider where they could obtain the money to carry out their schemes. In 1907 they would be reaping the recoupment of the Holborn-Strand scheme, they would be enjoying the profits of the new tramways, and they would then be in an entirely different position.—Eventually the scheme was postponed.—It was decided to spend £209,500 on widening Piccadilly between Sackville Street and the Circus. It was also decided to widen Sloane Street at its north end, between Brompton Road and Basil Street, to 60ft., at a cost of £60,000, towards which the Chelsea Borough Council is to contribute £20,000.

**An Amalgamation** has been made between Messrs. Measures Brothers, Ltd., of 53B, Southwark Street, S.E., and H. & G. Measures, of Croydon, in order to stop the suicidal competition which has been going on for some time between them. The purchase price agreed for the goodwill, plant, tools and stock works out roughly at £43,000, of which £20,000 is to be paid in cash and the balance in ordinary shares. This includes plant and stock of Messrs. H. & G. Measures at Battersea, where there is a building site with a frontage to the river, which Messrs. Measures Brothers propose to lease for fourteen years with the option of purchase of the freehold during the first seven years. Messrs. Measures Brothers have secured the opposition business for about one-ninth of their total capitalization; so that about 85 per cent. of the amount paid or to be paid to H. & G. Measures for the whole of their business is in available and tangible assets. By the arrangement Messrs. Measures Brothers will secure an excellent up-to-date foundry and shops, without which they have hitherto been working at a great disadvantage, and the present directors will have the co-operation of Messrs. H. & G. Measures, whose push and energy have done so much to build up the Croydon business.

## EARL PERCY ON INDIAN ENGINEERING.

SPEAKING at the distribution of prizes at Cooper's Hill Engineering College on Wednesday last Earl Percy (Under-Secretary of State for India) said the resources of the Indian Government in the early days were not such as to allow of very large, substantial and permanent allocations for public works. Therefore it was of the utmost importance that the State should have at that time in India a body of public servants possessed of the highest technical qualifications and skill in the most economic methods of work. In 1870 that was impossible, for the existing training colleges were too few, and those who passed in them did not often possess the special qualifications necessary for work of so peculiar a character and on so gigantic a scale as most of the public works in India. Therefore, it was determined to found the college at Cooper's Hill. Everyone who knew India well would say that the transformation which had taken place was little short of miraculous, and he thought they would agree with him in saying that India owed that transformation largely, if not entirely, to the splendid body of public works engineers who had devoted their lives and energies to the public service there. Yet much remained to be accomplished. A great part of India, especially in the south, was still very deficient in railway connections, and there was an enormous opening for irrigation works. No one could tell whether science would not reveal methods of combating the vagaries of the Indian climate by methods of distribution and storage which had not been suspected before. In addition, he thought the time was coming when the neighbouring empires would begin to awake to their responsibilities and to realize the vast potential wealth which lay ready to their hands in the husbanded resources of their river supply. When the time came, he knew no other quarter to which they would be likely to look for assistance than the English engineers, who had converted the sands and waste places of India and Egypt into gardens and fields of harvest. In two respects the profession most of them had chosen stood in a different and prouder category than any other. Wherever they went, by the banks of the Tiber, the Nile, the Tigris, the Euphrates, or to the plains of India, it was by the stupendous ruins of their great public works that we could get some conception of the magnificence and splendour of the old empires of the Cæsars, the Pharaohs or the Moguls. As it was with them, so he thought it would be with us. But it should also be our ambition to do something which they could not or, at all events, did not do—to leave the marks of our creative energy not merely on the surface of the land we ruled but in the character and hearts of the people we were called upon to govern.

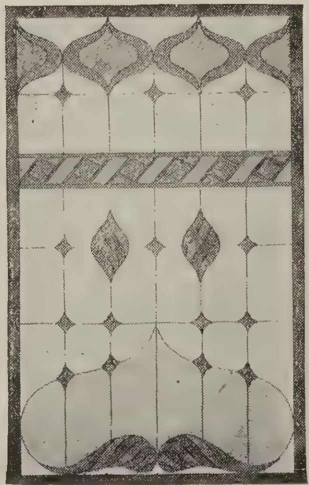
## Coming Events.

**Wednesday, August 12.**
INSTITUTE OF SANITARY ENGINEERS, LTD.—Meetings of Examination and Literary Committee at 3 30 p.m., General Purposes and Finance Committee at 4.15 p m., Election Committee at 5.15 p.m., and Council Meeting at 7 p.m.

**Tuesday, Sept. 1, to Friday, Sept. 4.**
IRON AND STEEL INSTITUTE (Barrow-in-Furness).—Annual Meeting Mr. R. A. Hadfield on "Alloys of Iron and Tungsten." Mr. J. E. Stead and Mr. A. W. Richards on "The Restoration of dangerously Crystalline Steel by Heat Treatment." Messrs. J. E. Stead and A. Windsor Richards on "Sorbitic Steel Rails." Mr. Thomas Baker on "The Influence of Silicon on Iron." Prof. E. D. Campbell on "Diffusion of Sulphides through Steel" Mr. William Campbell on "The Heat Treatment of Steel." Mr. R. M. Daelen on "The Rolling of Large Pipes." Mr. D. A. Louis on "The Regulation of the Combustion in Coke-oven Practice." Mr. W. F. Pettigrew on "The Fuel used in the Barrow-in-Furness District." Mr. C. H. Ridsdale on "The Diseases of Steel." Prof. A. Stansfield on "Carbon in Iron."

**Wednesday, August 5.**
BUILDERS' FOREMEN AND CLERKS OF WORKS' ASSOCIATION.—Ordinary Meeting at 8 p.m

"CLOISONNE GLASS"



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## Appointments Wanted.

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A BUILDER, PLUMBER & DECORATOR retiring from large estate needs RE-ENGAGEMENTS. Certificated bailiff. Rents collected, estates managed. Well up in all general repairs. Own plant and tools for all trades. Abstainer.—Apply, E. PAYNE, 27, Quaker Street, Spitalfields.

ARCHITECT'S ASSISTANT desires re-engagement. Nine years' varied experience. Sketches, working and detail drawings, designs, perspectives. Competition work. Neat and accurate draughtsman. Knowledge of construction, specifications: assist quantities. Good testimonials and references.—J. DAY, Oak Villa, Hatfield Street, Wakefield.

ARCHITECT'S ASSISTANT, P.R I.B.A., requires engagement; thoroughly understands Surveying, Levelling, Measuring up Old Buildings, Specification, Details. Salary moderate; good experience, very good references.—STANLEY THOMAS, Pleasant View, Rhydding, Neath

CARPENTER & JOINER, Sub-Contractor. Estimates given for the whole or part of the Carcasing, Fixing and Joinery Work (Labour only). Large jobs contracted for. Town or country. Competent and reliable.—J. TUCKER, 3, Larklere Road, Sydenham, S.E.

GENERAL or WORKING FOREMAN seeks engagement. Good references. Aged 41. Carpenter by trade.—W. N., 19, Rumsey Road, Stockwell, S.E.

GOOD MASON wants Job. Abstainer. Good draughtsman. Capable of setting out. References.—MASON, Stone Works, Frinton-on-Sea, Essex.

HOT WATER FITTER'S MATE wants Work; good, strong: age 20; knowledge of smithing.—A.D., 89, Denmark Road, West Kilburn.

JUNIOR ASSISTANT desires engagement. Neat Draughtsman, Tracer and Colorist. Measuring and Plotting. Good references.—F. ASH, Cotham Road South, Bristol.

JUNIOR ASSISTANT DISENGAGED. Salary no object.—Box 2524, BUILDERS' JOURNAL Office, 9, East Harding Street, Fetter Lane, E.C.

PAPERHANGER (Good) wants PIECE-WORK. Well up in all relief decorations. Moderate erms. Town or country. Life abstainer.—SPARKS, ictoria Grove, Stoke Newington.

PLUMBER, Gas and Hot Water Fitter. &c. Constancy. 4 years last sit. Abstainer. Good vorkman.—J. STURLEY, 131, Dennett Road, West roydon, Surrey.

YOUTH, with slight knowledge, requires three years' apprenticeship to a Builder. Small remium.—J. H., 22, Carisbrooke Road, Walthamstow.

## Appointments Vacant.

WEST HAM MUNICIPAL TECHNICAL INSTITUTE.
Wanted for the next Session, a TEACHER for a Pre-aratory Technical Drawing Class, for Building Trade tudents, one evening per week. Full particulars can e obtained on application to the Principal, Municipal echnical Institute, Romford Road, West Ham. E.

LEADED GLAZING.—WANTED, up-to-date man to prepare occasional Competitive ketches for Modern Domestic Work.—Samples to ox 2529, BUILDERS' JOURNAL Office, 9, East Harding treet, Fetter Lane, E.C.

WANTED in Architect's Office in Winchester, a JUNIOR CLERK; Shorthand, Typewriting, and Tracing. Applications to be accompanied by references. State wages required.—Box 2522, BUILDERS' JOURNAL Office, 9, East Harding Street, Fetter Lane, E.C.

## Miscellaneous.

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ABLE ASSISTANCE promptly rendered to Architects, Surveyors, Builders, &c. Designs, Working and Detail Drawings, Specifications, Quantities, Valuations, &c. Terms moderate.—H., 6, King's Road, Kingston-on-Thames.

ACCOUNTANT of wide experience willing to open builders' books on new simple system giving perfect prime cost. Same kept in order periodically if desired. Surveys made. Designs and specifications of all kinds prepared.—58, Walterton Road, W.

ARCHITECTS, BUILDERS, &c.—Tracings neatly executed and Specifications accurately typewritten. Moderate prices; strictly private.—c/o SUMMERSEAT, Post Office, Bradford.

CAMBRIDGE.—APARTMENTS, with or without board. Electric light; use of pianos; position central, close to all Colleges. Terms moderate.—Mrs. CLARK, 4, St. Andrew's Street. Tram and Bus from door.

MORTGAGE SECURITIES WANTED from £1,000 to £25,000 for large fund immediately available for advances.—Apply W. P. NEAL, Esq., Pinner's Hall, Great Winchester Street, London, E.C.

PARTNERSHIP.—Architect and Surveyor, with Practice of 30 years' standing and good convenient offices in best town on South Coast, would entertain a PARTNER. £2,500 Capital would be required.—Box 2526, BUILDERS' JOURNAL Office, 9, East Harding Street, Fetter Lane, E.C.

R. I.B.A., Society of Architects, and Civil Service Technical Examinations. Preparations by correspondence. Twenty-two first places.—G. A. T. MIDDLETON, 19, Craven Street, W.C.

R. I.B.A. EXAMS.—Personal and Correspondence tuition; courses of any duration. Apply for syllabus to Mr. A. G. BOND, B.A.Oxon., A.R.I.B.A., 115, Gower Street, London, W.C. (late Howgate and Bond).

TO ARCHITECTS, BUILDERS, AND OTHERS.—Plans prepared at lowest charges; Tracings from 5s. Specifications, &c., accurately typewritten, 1s. per 1,000 words.—D. R. MATHISON, 39A, Algernon Road, Hendon.

TO BUILDERS and CONTRACTORS. Two thorough experienced men, with good references, who have completed some of the best work in town, are now open to give prices for BRICKWORK to any quantity.—E. J., c/o Stationers, 3, Lavender Sweep, Battersea.

## Miscellaneous Articles for Sale.

LIFTS.—WM. AUG.'S GIBSON, LTD., formerly President of American Elevator Co., later Managing Director Otis Elevator Co., Ltd. Temple Bar House, 28, Fleet Street, London, E.C.

**6,000 TEA SETS, 3/6. 4,000 DINNER-SETS, 7/6 each. (Finest quality.) The Two Services sent for 10/6. Builders and Furnishers requiring China contracts, should write for quotations.—ARTHUR J. HULL, Dept. 71, King Street Pottery, Longton, Staffs.**

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OF OUR
# FORE-FATHERS

is rapidly disappearing, and many picturesque bits of Old London have already been demolished to make room for modern requirements.

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No further copies can be published, as the plates have been destroyed, and the pictures are therefore quite unique.

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| 2. **Holywell Street,**<br>from St. Clement Dane's Church<br>(since demolished). | 2s. 6d. each. |
| 3. **The "Old Bell,"**<br>Holborn (since demolished). | 1s. 6d. each. |
| 4. **Leather Lane,**<br>Holborn | 1s. 0d. each. |
| 5. **Davies Street**<br>(since demolished). | 9d. each. |
| 6. **Fetter Lane,**<br>View from Holborn. | 6d. each. |
| 7. **King Street,**<br>Westminster (since demolished). | 1s. 6d. each. |
| 8. **Staple Inn,**<br>Holborn. | 2s. 6d. each. |
| 9. **Milford Lane,**<br>Strand, and Booksellers' Row,<br>looking West (since demolished). | 6d. each. |
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| 12. **Old Houses in Strand.** | 6d. each. |
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**NOTE.—Advertisements for this page must reach the Office not later than 5 o'clock p.m. on Monday.**

# Tenders.

*Information from accredited sources should be sent to "The Editor" at latest by noon on Monday if intended for publication in the following Wednesday's issue. Results of Tenders cannot be accepted unless they contain the name of the Architect or Surveyor for the work.*

*Addressed postcards on which lists of tenders may be stated will be sent post free on application to the Manager,* Builders' Journal, 9, *East Harding Street, E.C.*

**Bath.**—For the following works, for the Waterworks Committee:—(1) Construction of an open reservoir, about 100ft. diameter, to hold 500,000 gallons, situated about five miles from Bath; (2) driving adits, cut-and-cover and laying and jointing pipes, and building manholes for the purpose of collecting several springs in St. Catherine's Valley above Batheaston; (3) excavating and refilling trenches, and carting, laying, and jointing about six miles of cast-iron pipes, 18in. and 12in. diameter, and about four miles of cast-iron pipes, 9in., 6in. and 4in. diameter, laying a line of 18in. pipes across and under the River Avon at Bath, together with all contingent work in connection therewith: (4) other subsidiary works:—

| | | | |
|---|---|---|---|
| Pethick Brothers, Plymouth | £18,645 | 19 | 0 |
| A. Wills & Sons, Bath | 17,294 | 0 | 0 |
| Peerless, Dennis & Co., Eastbourne | 14,449 | 0 | 0 |
| Hardy & Atkinson, West Hartlepool | 13,163 | 13 | 2 |
| H. W. Patrick, Wandsworth | 12,634 | 0 | 0 |
| R. H. B. Neal, Plymouth | 12,571 | 0 | 0 |
| G. Bell, Tottenham | 12,271 | 11 | 7 |
| B. Cooke & Co., Westminster | 10,865 | 1 | 2 |
| W. Jones & Son, Neath | 10,776 | 8 | 10 |
| E. R. Lester, Plymouth | 10,374 | 0 | 0 |
| J. Riley, Cheltenham | 10,183 | 18 | 5 |
| J. Moffat, Manchester | 10,066 | 19 | 11 |
| E. Nuttall & Co.,* Manchester | 9,961 | 11 | 8 |

* Accepted.

**Bath.**—For the manufacture and delivery of about 2,100 tons of cast-iron pipes, 18in. to 4in. diameter, together with about 45 tons of special castings, for the Waterworks Committee:—

| | | | |
|---|---|---|---|
| C. Jordan & Co., Ltd., Newport | £12,483 | 9 | 5 |
| Macfarlane, Strang & Co., Glasgow | 11,869 | 5 | 7 |
| C. Le Bas & Co., London | 11,805 | 12 | 6 |
| D. M. Stevenson & Co., Glasgow | 11,700 | 6 | 0 |
| Clay Cross Co., Chesterfield | 11,642 | 4 | 2 |
| D. Y. Stewart & Co., Ltd., Glasgow | 11,620 | 17 | 0 |
| T. Spittle, Ltd., Newport | 11,588 | 14 | 0 |
| A. G. Cloake, London | 11,532 | 9 | 0 |
| R. Maclean & Co., Glasgow | 11,492 | 19 | 0 |
| Sheepbridge Coal and Iron Co., Ltd., Chesterfield | 11,453 | 6 | 10 |
| J. & S. Roberts, Ltd., West Bromwich | 11,445 | 2 | 1 |
| Staveley Coal and Iron Co., Ltd., Chesterfield | 11,393 | 2 | 3 |
| Stanton Ironworks Co., Ltd., Nottingham | 10,958 | 6 | 3 |
| Cochrane & Co.,* Dudley | 10,788 | 9 | 11 |

* Accepted.

**Burslem.**—For the erection of a branch post-office at Burslem, for H.M. Office of Works, &c.:—

| | | | |
|---|---|---|---|
| W. Cooke | £3,200 | Bennett Brothers | £2,890 |
| J. J. Longden | 2,998 | T. Godwin* | 2,856 |
| W. Grant | 2,990 | | |

* Accepted.

**Brighton.**—For the erection and completion of eight five-roomed artizans' dwellings, together with sundry works connected therewith, in Elm Grove, for the Town Council. Mr. Francis J. C. May, M.I.C.E., F.S.I., borough engineer and surveyor:—

| | |
|---|---|
| W. Taylor | £3,900 |
| H. A. Caxton-Jay | 3,600 |
| Sattin & Evershed | 3,592 |
| T. Whillier,† Hollingbury Road | 2,246 |
| J. & W. Simmonds,* Ashford Road | 2,552 |

* Accepted. † Withdrawn.

**Bromsgrove.**—For the construction of cast-iron and stoneware pipe sewers, manholes and lampholes, filter-beds, tanks, road distributing carriers and chambers, drains and other works required at Alvechurch, near Bromsgrove, for the Bromsgrove Rural District Council. Mr. William Fiddian, F.S.I., engineer, Old Bank Offices, Stourbridge:—

| | | | |
|---|---|---|---|
| G. Law, Kidderminster | £2,974 | 16 | 7 |
| J. Barnes, Northfield | 2,831 | 0 | 0 |
| Currall, Martin & Lewis, Birmingham | 2,653 | 14 | 3 |
| E. Boore, Bearwood Road, Smethwick | 2,527 | 18 | 2 |
| T. Vale, Stourport | 2,413 | 17 | 4 |
| H. Law, Erdington | 2,342 | 14 | 6 |
| T. Allsopp, Tipton | 2,363 | 14 | 9 |
| A. B. & W. J. Tilt, Bromsgrove | 2,177 | 0 | 0 |
| J. A. Meredith, Cradley Heath | 2,165 | 3 | 4 |
| G. Holloway,* Wolverhampton | 1,987 | 0 | 0 |

* Accepted.

**Byfleet (Surrey).**—For the taking down and rebuilding two bridges at Byfleet, Surrey, known as Plough Bridges, for the Chertsey Rural District Council. Mr. W. Durrant, surveyor:—

| | |
|---|---|
| Pethick, Vauxhall | £2,200 |
| Jackson & Son, Plaistow | 1,995 |
| Chamberlain, Addlestone, Surrey | 1,959 |
| G. A. Franks, Surrey | 1,847 |
| Knight & Son, Chertsey, Surrey | 1,775 |
| Herring & Son,* Chertsey, Surrey | 1,700 |

* Accepted. [Surveyor's estimate, £1,799 4s. 2d.]

**Enfield.**—For the making-up of the following private streets in their district, for the Enfield Urban District Council, viz.: Garfield Road, Ponder's End; Uplands Park Road, Enfield. Mr. Richard Collins, surveyor:—

Uplands Park.

| | |
|---|---|
| Kitteringham & Co., Waltham Abbey | £1,400 |
| W. Peters & Co., Stepney | 1,112 |
| E. J. Betts,* Enfield Highway | 1,112 |

Garfield Road.

| | |
|---|---|
| Kitteringham & Co. | £720 |
| W. Peters & Co. | 598 |
| E. J. Betts* | 535 |

* Accepted.

**Knaresborough.**—For the various works required in carrying out the Follifoot waterworks scheme, for the Knaresborough Rural District Council. Mr. Richard Anakin, engineer, 11, Dragon Terrace, Harrogate:—

| | | | |
|---|---|---|---|
| T. Rowland, Sandiway, Northwich | £2,584 | 16 | 6 |
| R. A. Crowe, Deansgate, Manchester | 2,477 | 9 | 0 |
| R. Barker, Harrogate | 2,430 | 6 | 10 |
| T. Bell, Market Weighton | 2,230 | 6 | 8 |
| A. Dickinson, Leeds | 2,196 | 3 | 1 |
| T. Smith, Woodhead | 2,157 | 14 | 0 |
| T. E. Sugden, Keighley | 2,150 | 0 | 0 |
| C. Dickinson, Harrogate | 2,120 | 0 | 0 |
| F. N. Simpson, Burton Leonard | 2,070 | 11 | 10 |
| H. Matthews, Harrogate | 2,010 | 0 | 0 |
| B. Oxley, Harrogate | 1,956 | 9 | 1 |
| C. Birkhill,* York | 1,745 | 13 | 0 |

* Accepted.

**London, E.C.**—For external painting and repairing works, &c., at the St. Luke's Workhouse, Shepherdess Walk, City Road, E.C., for the Guardians of Holborn Union. Mr. Alfred Saxon Snell, F.R.I.B.A., architect:—

| | | |
|---|---|---|
| M. McCarthy, S.W. | £2,665 | 0 |
| W. A. King, S.W. | 1,987 | 15 |
| J. D. Pitcher & Son, E.C. | 1,974 | 8 |
| H. Wall & Co., N.W. | 1,703 | 0 |
| W. Reason, E.C. | 1,599 | 0 |
| T. G. Hawkins, W.C. | 1,586 | 0 |
| E. Proctor & Son, S.E. | 1,430 | 0 |
| Gavin Brothers, Wilson Street, E.C. | 1,167 | 10 |

* Accepted.

**London, S.E.**—For sanitary and drainage works at the Morden Terrace School, Lewisham Road, for the London School Board. Mr. T. J. Bailey, Board's architect:—

| | | |
|---|---|---|
| G. Parker | £2,945 | 0 |
| J. W. Falkner & Son | 2,790 | 0 |
| Johnson & Co. | 2,650 | 0 |
| Lathey Brothers | 2,635 | 0 |
| R. P. Beattie | 2,630 | 17 |
| W Downs | 2,548 | 0 |
| J. & C. Bowyer | 2,487 | 0 |
| A. Porter* | 2 350 | 0 |

* Recommended for acceptance.

**London, S.E.**—For the erection of schools at Denmark Hill, Camberwell, for the London School Board. Mr. T. J. Bailey, Board's architect:—

| | | | |
|---|---|---|---|
| J. Appleby & Sons | £22,695 | W. J. Mitchell & Son | £21,397 |
| Johnson & Co. | 22,119 | F. & H. F. Higgs | 21,586 |
| J. Smith & Sons, Ltd. | 22,075 | Martin, Wells & Co., Ltd. | 21,455 |
| J. & C. Bowyer | 21,978 | W. Downs | 21,352 |
| E. Lawrence & Sons | 21,949 | J. & M. Patrick | 20,615 |
| J. Garrett & Son | 21,909 | J. Marsland & Sons* | 20,494 |
| Holliday & Greenwood, Ltd. | 21,791 | | |

* Recommended for acceptance.

**London, S.E.**—For additions and alterations to No. 26, London Road, Forest Hill, S.E. Mr. J. Randall Vining, architect and surveyor, 89, Chancery Lane, W.C.:—

| | | | |
|---|---|---|---|
| A. Black & Son | 1,700 | A. W. Coombs | £1,569 |
| Turtle & Appleton | 1,653 | J. Smith & Sons | 1,535 |
| J. & C. Bowyer | 1,637 | T. R. Roberts & Co* | 1,510 |
| Alfred Sykes | 1,578 | | |

* Accepted.

**London, N.**—For three additional storeys to warehouse, Kingsland, N. Mr. J. Randall Vining, architect and surveyor, 89, Chancery Lane, W.C.:—

| | | | |
|---|---|---|---|
| J. Marsland & Sons | £2,938 | McCormick & Sons | £2,819 |
| Perry & Co. | 2,900 | C. Wall | 2,671 |
| Clarke & Mannooch | 2,887 | A. Black & Son | 2,637 |
| J. & C. Bowyer | 2,825 | Turtle & Appleton* | 2,497 |

* Accepted.

**London, S.W.**—For the erection of school at Bonneville Road, Clapham Park, for the London School Board. Mr. T. J. Bailey, Board's architect:—

| | | | |
|---|---|---|---|
| J. Carmichael | £21,517 | W. J. Mitchell & Son | £20,483 |
| Holliday & Greenwood, Ltd. | 21,460 | G. E. Wallis & Sons | 20,478 |
| Lathey Brothers | 21,279 | E. Lawrance & Sons | 20,338 |
| J. Marsland & Sons | 21,233 | Treasure & Son | 20.325 |
| Stimpson & Co. | 20,641 | J. Garrett & Son | 20.310 |
| F. & H. F. Higgs | 20,637 | J. Appleby & Sons | 20,273 |
| J. & C. Bowyer | 20,593 | Holloway Brothers Ltd. | 20,062 |
| J. Smith & Sons, Ltd. | 20,552 | Martin, Wells & Co., Ltd | 19,665 |
| W. Downs | 20,535 | J. & M. Patrick* | 19,411 |

* Recommended for acceptance.

**London, S.W.**—For the erection of a school in Townmead Road, Fulham, for the London School Board. Mr. T. J. Bailey, Board's architect:—

| | | | |
|---|---|---|---|
| W. King & Son | £28,817 | 0 | 0 |
| C. F. Kearley | 28,225 | 0 | 0 |
| J. Carmichael | 27,761 | 0 | 0 |
| Martin, Wells & Co., Ltd. | 27,352 | 0 | 0 |
| Stimpson & Co. | 27,287 | 0 | 0 |
| Hudson Brothers | 26,725 | 0 | 0 |
| T. L. Green | 26,510 | 0 | 0 |
| J. Grover & Son | 26,357 | 0 | 0 |
| J. Appleby & Sons | 26,227 | 0 | 0 |
| Holloway Brothers, Ltd. | 26,118 | 0 | 0 |
| Lathey Brothers | 25,976 | 0 | 9 |
| Leslie & Co. | 25,339 | 3 | 5 |
| Treasure & Son | 25,246 | 0 | 0 |
| E. Lawrance & Sons | 24,714 | 0 | 0 |
| C. Dearing & Son | 24,590 | 17 | 6 |
| G. E. Wallis & Sons* | 24,148 | 0 | 0 |

* Recommended for acceptance.

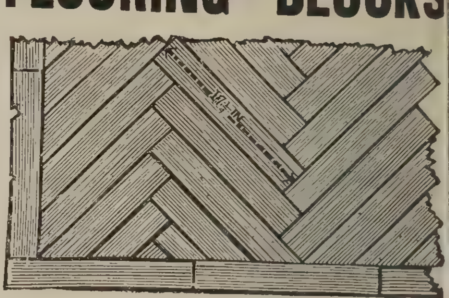
**London, S.W.**—For the erection of a school at Merton Road, West Lambeth, for the London School Board. Mr. T. J. Bailey, Board's architect:—

| | | | |
|---|---|---|---|
| W. Smith & Son | £23,678 | Hudson Brothers | £21,572 |
| H. Holloway | 22,497 | W. Downs | 21,558 |
| J. Smith & Sons, Ltd. | 22,122 | J. &. C. Bowyer | 21,293 |
| Martin, Wells & Co., Ltd. | 22,033 | J. Garrett & Sons | 21,191 |
| J. Carmichael | 21,928 | J. Marsland & Sons | 21,140 |
| Lathey Brothers | 21,857 | Stimpson & Co., Ltd. | 20,990 |
| C. F. Kearley | 21,659 | E. Lawrance & Sons | 20,975 |
| F. & H. F. Higgs | 21,599 | G. E. Wallis & Sons | 20,371 |
| Holliday & Greenwood, Ltd. | 21,596 | J. & M. Patrick* | 19,419 |

* Recommended for acceptance.

(*Continued on p.* xviii.]

FLOORING BLOCKS



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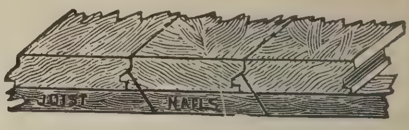
|---|---|---|---|
| | At Wharf. | ex Ship within one month. | At Wharf. |
| 17¼ × 3 × 3 | 12 9 | 12 0 | 16 6 |
| 17¼ × 3 × 2 | [illegible] 3 | 7 9 | 11 5 |
| 17¼ × 3 × 1½ | 6 9 | 6 3 | 9 0 |



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1 × 4½ „ 45/6 „ 22/6 „

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| | |
|---|---|
| Four lines or under (about 30 words) .. .. | 1 6 |
| Each Additional Line (about 7 words) .. .. | 0 6 |

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ABROAD, 17/4.

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Communications respecting Advertisements to be addressed to THE MANAGER, Advertisement Department, 9, East Harding Street, E.C.

## TO CONTRIBUTORS.

THE EDITOR will be pleased to consider any articles, illustrated or otherwise, dealing with old and new buildings, methods of construction, or other matter of an architectural character. He will also be glad to consider architectural photographs and sketches (the latter preferably in black and white) and measured drawings of work in this country or abroad. News items of interest to architects and builders will also be considered, provided the name and address of the sender are given; no notice will be taken of anonymous contributions. All communications should be addressed to the Editor of THE BUILDERS' JOURNAL, 9, East Harding Street, E.C.

100,000 SQUARES NEW YELLOW FEATHER-EDGE BOARDS, 1¼ in. 6 ft. lengths, 7s. 6d. per square; Rough Boarding (yellow), 1 in. 6 ft. lengths, 6s 6d. per square; 3 in. by 2 in., 5s. per 100 ft.; 3 in. by 3 in., 7s. 6d. per 100 ft.; 4 in. by 3 in., for posts, 10s. per 100 ft.; Arris Rails in any lengths, 5s. per 100 ft.; Palings, 5 ft. by 3 by ¾, 7s. per 100; Palings, 5 ft. by 2½ by ¾, 6s. 6d. per 100. All the above cut out of yellow deals. Slating Battens, 2 by ¾, 10s. 6d. per 1,000 ft.—JOSEPH DRAPER, Grove Works, Este Road, Clapham Junction, S.W. Telephone 38, Battersea.

6,000 SLEEPERS FOR SALE, 6 ft. 6 in. long by 9 in. wide by 4½ in. thick, also 6,000 9 ft. Sleepers, half round, price 1s. 3d. each.—J. DRAPER, Este Road, Clapham Junction. Telephone 38, Battersea.

TUNNELLING BOARDS. 1,000 Squares for Sale, ¾-inch thick. Cut to any length. Price 5s. per square.—Apply J. DRAPER, Este Road, Battersea. Telephone 38, Battersea.

FLOORING BOARDS and MATCHING (100,000 squares of new), arrived in Surrey Commercial Dock. Prices: floor boards 1¼-in. at 8s. 6d. per square; 1-in. at 7s. per square; ¾-in., 6s. per square; 1-in. matching, 7s. 6d. per square; ¾-in. at 6s. 6d. per square; ⅝-in. at 5s. 6d. per square; ½-in. at 5s. per square. These goods can be seen at J. DRAPER, 103, Lavender Hill, Clapham Junction. Telephone 38, Battersea.

SEWER CONTRACTORS and others.—POLING BOARDS, 3 ft. to 6 ft. long, good quality, £6 per fathom. STRUTS, WALLINGS, and WHEELING PLANKS, at low rates, 12,000 SPRUCE DEALS, 12 ft. long, 3 in. by 9 in. wide, at 2s. 3d. each.—DRAPER, Timber Merchant, Clapham Junction. Telephone 38, Battersea.

BRICK HACKS and LEWIN BOARDS CUT TO ORDER. Large Stock always kept on hand.—J. DRAPER, Grove Works, Este Road, Clapham Junction, S.W. Telephone 38, Battersea.

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| | |
|---|---|
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| Complete Patent - - - - - | 8 8 0 |

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THE MANAGER, BUILDERS' JOURNAL,
9, EAST HARDING STREET, FETTER LANE, E.C.

## Property and Land Sales.

*The charge for Advertisements under this heading is 2s. per insertion not exceeding four lines, and 6d. per line after.*

Re R. S. Buckeridge, a bankrupt by order of trustees, Harrow Road, W.—The whole of the valuable PLANT, WOOD-WORKING MACHINERY, &c.

MESSRS. HIBBARD & WHITTINGHAM will SELL by PUBLIC AUCTION, upon the PREMISES, Goldney Place, Harrow Road, W., on TUESDAY and WEDNESDAY, AUGUST 11th and 12th, at ONE o'clock each day. The catalogue contains:—12 h.p. gas engine; planing, thicknessing, and grooving machine; two vertical spindle moulding machines and cutters, band saw bench, circular saw bench, tenon cutting machine, four-cutter moulding machine, &c.; the stock of the builder's ironmongery; stock of timber, comprising bone-dry logs of mahogany, Austrian oak, teak, Kauri and Oregon pine, pitch pine deals, matching, flooring, &c.; 2 builder's vans, 2 dog carts with rubber tyres, 2 mares, harness, &c.; the working plant of scaffolding, ladders, 100 pair trestles steps, and a variety of other valuable stock and plant.—Catalogues may be had on the premises; of the trustee, A. C. BOURNER, Esq., Bush Lane House, Cannon Street, E.C.; or of the Auctioneers, 17, Union Court, Old Broad Street, E.C., and Winchmore Hill, N.

MESSRS. HIBBARD & WHITTINGHAM beg to call attention to a very VALUABLE PLANT of hard wood moulds for decorative mouldings, panels, over-doors, &c., contents of the compo shop, screw-down press, bench, two coppers, &c., which will be included in the above Sale by Auction.

COUNTRY BUILDING LAND, £25 per acre, adjoining railway station, 45 miles from London. Suitable for country bungalows, which will sell readily. Area, 126 acres. Price, freehold, £3,150. Water laid on.—Apply to Messrs. HARMAN BROS., Auctioneers, 25, Ironmonger Lane, E.C.

TO BE SOLD, 12 acres FREEHOLD BUILDING LAND as a whole or in portions. Elevated and healthful position, West End. Fully ripe. Easy access to City. Price £7,800.—GIBBS & Co., 2A, New Broadway, Ealing.

FREEHOLD BUILDING LAND FOR SALE, ripe for immediate development, close to station, with trains to all parts. Road made. Frontage about 1,700 feet. Price £7 per foot. Would be divided.—Further particulars, BREADMORE & WEBB, 64, Sheen Road, Richmond.

BUILDERS cut, cut, cut prices all round London; why not go farther afield? Splendid opening at Pitsea, 26 miles of London on Southend main line; high, healthy, and picturesque locality; FREEHOLD LAND, in plots to suit, from £5; acres £35; enormous selection; free deeds; easy terms; no charge for showing over.—Apply, THE LAND COMPANY, 67 & 68, Cheapside; or call Estate Office, next to Pitsea Station.

**WIRE NAILS,** Mixed, 9*s.* per cwt.; 28 lbs., 2*s.* 6*d.*; Screws, mixed, 30*s.* per cwt.; 28 lbs., 8*s.*; wire, cut, wrought and malleable nails, tacks, shoe nails, rivets, &c., wholesale prices.—MIDLAND NAIL WORKS, 25 and 26, Rea Street, Birmingham. (John Pyne, Proprietor.)

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| | | | | | | |
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9, EAST HARDING STREET, FETTER LANE, E.C.

## TENDERS (*cont. from* p. xvi.)

**London, S.W.**—For drainage and sanitary works at the Ackmar Road School, Fulham, for the London School Board. Mr. T. J. Bailey, Board's architect :—

| | | | |
|---|---|---|---|
| G. Neal | £2,514 | 0 | 0 |
| Lathey Brothers | 2,399 | 0 | 0 |
| Durbin & Katesmark | 2,390 | 10 | 0 |
| R. P. Beattie | 2,360 | 0 | 0 |
| J. Peattie | 2,347 | 0 | 0 |
| F. Bull* | 2,279 | 10 | 6 |

* Recommended for acceptance.

**London, S.E.**—For the erection of special school at Hearnville Road, Balham, for the London School Board. Mr. T. J. Bailey, Board's architect :—

| | | | |
|---|---|---|---|
| G. Neal | £5,345 | E. Triggs | £4,031 |
| Stevens Brothers | 4,535 | General Builders, Ltd. | 4,024 |
| E. P. Bulled & Co. | 4,419 | W. Akers & Co. | 3,963 |
| J. Garrett & Son | 4,299 | W. Harris | 3,952 |
| Rice & Son | 4,269 | Martin, Wells & Co., Ltd.* | 3,769 |
| H. Wall & Co. | 4,207 | | |
| Marchant & Hirst | 4,149 | | |

* Recommended for acceptance.

**London, S.W.**—For the enlargement of the Millbank School, Westminster, for the London School Board. Mr. T. J. Bailey, Board's architect :—

| | | |
|---|---|---|
| H. Wall & Co. | £2,145 | 0 |
| W. King & Son | 2,134 | 0 |
| Holloway Brothers, Ltd. | 2,109 | 0 |
| Treasure & Son | 2,088 | 5 |
| Spencer, Santo & Co., Ltd. | 2,067 | 10 |
| T. L. Green | 1,884 | 0 |
| J. Simpson & Son | 1,863 | 15 |
| General Builders, Ltd. | 1,758 | 0 |
| E. Triggs | 1,660 | 0 |
| Stevens Brothers | 1,636 | 0 |
| Martin, Wells & Co., Ltd. | 1,563 | 0 |
| Rice & Son | 1,549 | 0 |
| C. F. Kearley | 1,529 | 0 |
| C. Dearing & Son* | 1,473 | 0 |

* Recommended for acceptance.

**Miskin (Mountain Ash, Wales).**—For the erection of a chapel at Miskin, Mountain Ash, for the Trustees of Bethel Congregational Chapel. Mr. T. W. Millar, architect, Mountain Ash :—

| | | | |
|---|---|---|---|
| T. W. Davies, Porth | £2,400 | 0 | 0 |
| Jones Brothers, Barry Dock | 2,350 | 0 | 0 |
| F. Mills,* Mountain Ash | 2,310 | 7 | 7 |

* Accepted.

**Oadby (Leics.).**—For the construction of a 12in. diameter glazed stoneware pipe outfall sewer (Hassall's patent joints) about 1,100yds. long, together with manholes, lampholes, ventilators, automatic flushing chamber, an additional tank at the existing sewage outfall, and other works in connection therewith for the parish of Oadby, for the Blaby Rural District Council. Messrs. Draper & Walters, Friar Lane, Leicester, and J. Turner, surveyors, Glen Parva, near Leicester :—

| | | |
|---|---|---|
| A. Jewell, Market Harborough | £3,245 | 0 |
| H. H. Barry, Notts | 2,875 | 0 |
| Hutchinson & Son, Leicester | 2,553 | 0 |
| Chamberlain | 2,550 | 0 |
| T. Philbrick, Leicester | 2,521 | 0 |
| King & Ridley, Lutterworth | 2.275 | 0 |
| J. Holme, Leicester | 1,683 | 3 |
| H. Mason & Son, Leicester | 1,668 | 17 |
| C. W. Mattock, Leicester | 1,635 | 0 |
| Stimpson & Rollston,* Donnington Street, Leicester | 1,609 | 0 |

* Accepted.

**Smallburgh (Norfolk).**—For certain alterations and additions to the laundry and the erection of new receiving wards and a disinfector at the workhouse at Smallburgh, for the Guardians of Smallburgh Union. Mr. John T. Lee, architect, 26, Great James Street, Bedford Row, London, W.C. :—

| | | | |
|---|---|---|---|
| T. H. Blyth, Foulsham | £1,620 | 0 | 0 |
| Carter & Wright, Great Yarmouth | 1,609 | 0 | 0 |
| G. Riches, Cromer | 1,572 | 0 | 0 |
| W. Porter, Cromer | 1,570 | 0 | 0 |
| H. C. Greengrass, Norwich | 1,527 | 0 | 0 |
| W. Laycock, North Walsham | 1,498 | 10 | 0 |
| W. & F. Appleton, North Walsham | 1,489 | 8 | 9 |
| H. Skuffham, Suffolk | 1,479 | 4 | 1 |
| G. E. Hawes Norwich | 1,440 | 0 | 0 |
| A. D. Boddy & Son, Norwich | 1,399 | 0 | 0 |
| R. C Watts, Norwich | £1,396 | 0 | 0 |
| W. J Hannant, Norwich | 1.357 | 0 | 0 |
| Batchelor & Son, Stalham | 1,198 | 10 | 0 |

## Bankruptcies.

[Abbreviations : R.O.—receiving order ; P.E.—public examination : C.C.—county court ; O.R.—official receiver ; Adj.—Adjudication.]

J. W. CARR, builder, Acton. R.O. July 23rd.

J. J. BORRINGTON, plumber, glazier and gasfitter, Derby. R O., and adj. July 24th.

J. E. SMITH, marble mason and tiler, Catford. R.O. July 21st.

W. B. HODGSON, plumber, Morecambe. R.O. and adj. July 23rd.

W. G. BROWN, builder, Leicester. Liabilities £4,927 ; assets £3.420.

W. DAWBARN & Co, builders' merchants, Liverpool. Liabilities £6,360 ; assets £2,655.

G. CHANDLER, builder, Rugby. Liabilities £10,000 ; assets £1,087.

R. PECK, builder and contractor, Chesterfield. Liabilities £1,773 ; deficiency £758.

J. J. SHAW, painter and decorator, Portland. P.E., Dorchester County Hall, October 2nd, at 12.30.

S. FRANKLIN, builder, Stonehouse. R.O. and adj. July 23rd.

E. W. STEVENS, engineer, Taunton. R.O. and adj. July 11th.

J. BARLOW, stonemason, Wolstanton. R.O. and adj. July 22nd.

J. W. SMITH, builder and contractor, Small Heath. R.O. July 24th.

J. R. CORKE, decorator, Hull. First meeting. O.R.'s, Hull, August 5th, at 11. P.E., Hull C.C., August 17th, at 2.

D. ELLIS, builder and contractor, Llandudno. Liabilities expected to rank, £2,152 ; assets £172 ; deficiency £2,152.

E. HUGHES, builder, Stroud Green, London, N. Liabilities £4.790 ; assets estimated to produce a surplus of £1,635.

J. HOWARD & Co., builders' merchants, London, N.E. First meeting, Bankruptcy Court, August 10th, at 12. P.E., same, September 1st, at 12.

E. RICHARDS, slate merchant, Edmonton. R.O. July 22nd. First meeting, Bankruptcy Court, August 12th, at 12. P.E., same, September 22nd, at 11.30.

B. J. RILEY-COONEY, builder, Lower Edmonton. First meeting, O.R.'s, 14, Bedford Row, W.C., August 7th, at 12. P.E , Edmonton C.C., September 7th, at 11.30.

P. W. LODGE, plumber, Batley. R.O. and adj. July 20th. First meeting, O R.'s, Dewsbury, August 5th, at 10.30. P.E., Dewsbury C.C., August 11th, at 2.

W. H. INGLESON, builder, Merthyr Tydfil. R O. and adj. July 20th. First meeting, 135, High Street, Merthyr Tydfil, August 5th, at 3. P.E., Merthyr Tydfil Town Hall, October 14th, at 3.

A. A. ROSE, builder, Boscombe, Bournemouth, and Parkstone. R O. and adj. July 18th. First meeting, O.R.'s, Salisbury August 5th, at 12.30. P.E., Poole Town Hall, August 26th, at 11 30.

The following companies are to be wound up :—

- EREWASH VALLEY BRICK, PIPE AND POTTERY CO., LTD. F. Lema, C.A., Nottingham, liquidator.
- FARNWORTH & WIDNES BRICK AND TILE CO., LTD. O. D. Marsh, Victoria Square, St. Helen's, liquidator.
- FEEDER ROAD SAW MILLS AND TIMBER CO., LTD. Bristol.
- LANCASHIRE PATENT PLASTER SLAB CO., LTD., Bolton.
- LONDON AND PROVINCIAL ELECTRIC CONSTRUCTION CO., LTD. T. Hunter, 426, Mansion House Chambers, E.C., liquidator.
- PUBLIC WORKS CONSTRUCTORS LTD., London, E C. G. S. Barnes, 33, Carey Street, W.C., liquidator.

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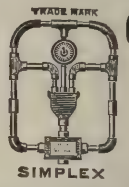

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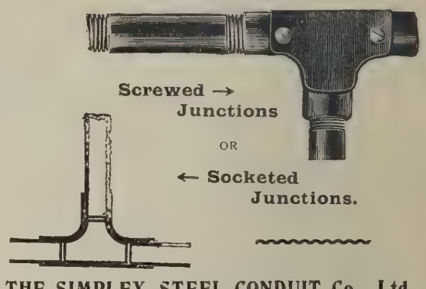

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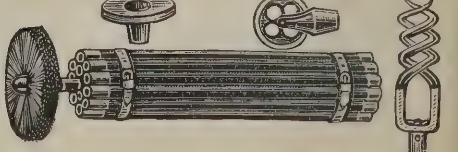

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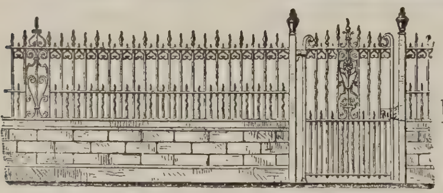

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THE

BUILDERS' JOURNAL

AND ARCHITECTURAL RECORD.

August 12, 1903. Vol. 18, No. 444. 9, East Harding Street, E.C.

**The Stuffy House.** It has been suggested that the first act of a member of Parliament on entering Paradise would be to move for the appointment of a Select Committee to enquire into its ventilation; in which event let us hope the result will be more satisfying than that which the Select Committee of the mundane House sets forth in its recently-issued report, printed on another page of this issue. That report is a mixture of suggestion and disappointment. Everyone who has been in the House of Commons knows that, though its air is washed and filtered and warmed, the place is a very den of lassitude. It has been bottled and tested by this newest Select Committee on ventilation and was found to be quite normal—there being no surcharge of carbonic acid, no overheating, no bacteria in deadly hordes—in fact, scientifically satisfactory: and yet members are painfully aware that this same air takes the life out of them. We had occasion to refer to the fact some months ago, and then suggested that it would be of considerable benefit if, during intervals, the windows of the House were thrown open and the fresh air allowed to sweep in, smoke-laden, fog-laden and acid-laden though it be. The Committee do not even suggest that. It will be seen that three main proposals came before them—Mr. Key advocating the plenum system, with every window always closed and the air forced in at ceiling-level; Mr. Armitage also advocating the admission of the air at the ceiling but withdrawing it with exhaust power at the base of the clock tower; and Mr. Fox advocating the introduction of air at low velocity along the sides, under the galleries and elsewhere, withdrawing it both at floor and roof level. All three schemes are disapproved of, in part. The Committee say that Mr. Key's system may certainly not create a draught, but it is dependent entirely on its intake (instead of both intake and outflow being under control), and, what is of more moment, it forces the air down on the members, whose breathings are supposed to rise and be withdrawn at ceiling-level. A similar objection can be raised against Mr. Armitage's proposal, in addition to which there would probably be draughts with it. The third proposal, Mr. Fox's, meets the requirements in admitting the air at the sides, at about the level of the members' heads, while at the same time getting rid of those dust-diffusing gratings now installed on the floor of the House: but the Committee do not believe it could be effectively done without causing draughts. So there is the end of their investigations. What specific recommendations they make do not amount to much. They urge that a full enquiry should be held into the problems of ventilation, which does not help the members much just now. They talk about the irregular channel that leads from the intake to the equalizing chamber; it certainly ought to be cleaned and straightened, but then the cost would sure to be considerable, and so they advise that someone should find out how much it would cost—another postponement. They suggest other things, as will be seen—electric fans, water-screens, the appointment of a ventilation engineer—but there is not much comfort in the report. Ventilation is doubtless not an exact science, and there is much yet to be learned about it: but with the opportunity of having the best experts before them we expected the Committee would arrive at a more definite result than they have: for it would seem that if all their recommendations were carried out the air would not be much improved. The fact is they have not discovered what is wrong with it: and without knowing that they cannot be expected to say how the House can be properly ventilated.

———

**Green about Houses.** All over the country, but more especially in the suburbs of growing towns, it is a sadly familiar sight to see green fields turned into wildernesses of bricks and mortar. To protest against this growth were foolish, but there is very good cause for complaint with the manner in which it is usually carried out. The fact cannot be too widely appreciated that houses must have green of some kind about them to be habitable. We cannot expect lawns to cottages which are crowded on any available area, as many and as quickly as possible. We must admit that landowners have to make a profit and builders have to erect houses which will let at minimum rents. But we very strongly deprecate the manner in which these men commonly set to work. It seems to be an unwritten maxim with them that they will not lay a brick till every tree and shrub has been cut down and the site "cleared," as they call it. Then follow those desert-like habitations, whether they be ill-built or well-built. What we urge is that in all such cases builders should see, by looking at their plans, what trees and what grass can be preserved. It would require but very little foresight, yet it would mean much to those who have to live in the houses.

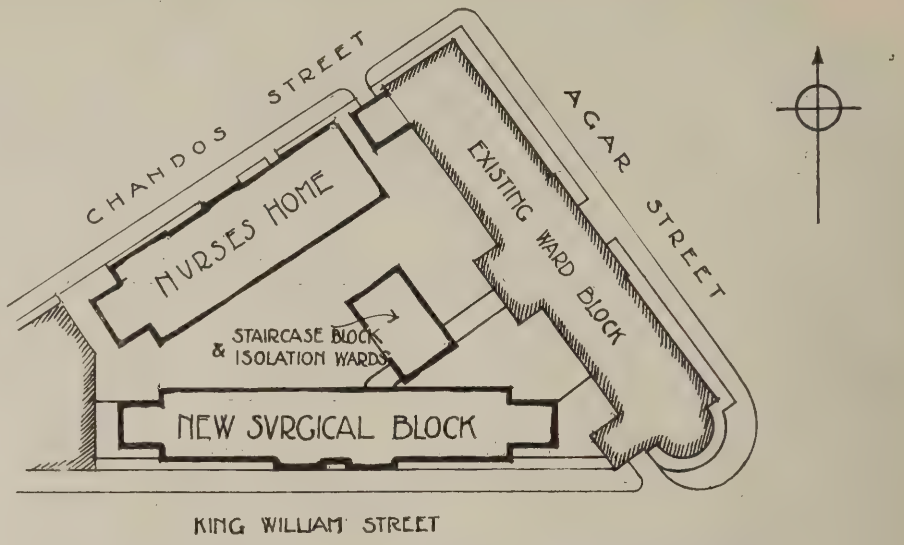
**The Westminster Vandalism.** We are glad to see that public attention is being drawn to the proposals of the Ecclesiastical Commissioners to demolish the old residential quarter immediately south of Westminster Abbey and Deanery Garden, with a view to selling the sites for important commercial buildings. We were the first to expose these proposals. The matter has now come before the House of Commons, for Mr. Channing asked last week whether the Government would make representations to the Ecclesiastical Commissioners or take other steps in order to prevent their scheme being carried out. Mr. Cavendish replied that the matter did not come within the jurisdiction of the First Commissioner of Works, but he would strongly disapprove any building scheme which might impair the safety or amenity of the Abbey.

———

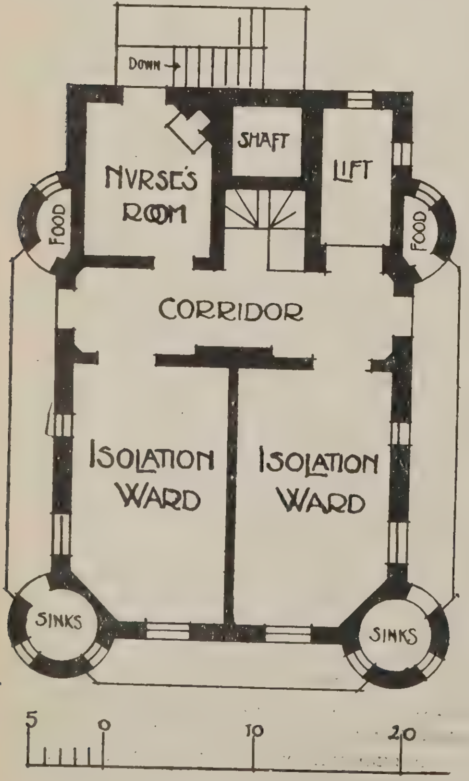
**The New Academy Rules.** Under the new rules for admission to the Royal Academy schools, which will come into operation next January, there is no restriction as to age, but no student can compete for scholarships, prizes or medals who is more than twenty-eight years of age (formerly the limit was fixed at twenty-five). The architectural works required for admission are now a plan and elevation of a building, or part of a building, to be done from the candidate's own notes and measurements, not a geometrical elevation which might be taken from published drawings or prints, as hitherto; elevations of the Orders, an original perspective, and a drawing of architectural ornament from the cast (all these as before). Instead, however, of the perspective and the drawing from the cast a portfolio of not fewer than six original sketches of architecture may be submitted, one being an original design and at least two others shaded studies of architectural sculptured ornament. Then there is a change in regard to the works required from probationers on their admission, for, instead of a geometric elevation (with or without a plan) of a building in London, an elevation *and* plan are required, which may be of any building or part of a building, not necessarily in London, or of one of the larger architectural works in any museum, to be done in two evenings of two hours each; while instead of two outline studies from casts an architectural design will be required, to be done in six evenings of two hours each: in addition to which architects will have to pass an examination in perspective and the history of architecture.

# CHARING CROSS HOSPITAL.

We are able to publish this week elevations and plans of the new ward and staircase blocks now being erected at Charing Cross Hospital from designs by Mr. Alfred Saxon Snell, F.R.I.B.A. The accompanying plan shows the general disposition of the blocks, which above the ground floor are separated from one another by open spaces. These openings allow free circulation of air around all the buildings. The surgical ward block, illustrated in the centre plates, faces King William Street. The wards are contained on three floors above the ground floor. On each floor there is a large ward for sixteen beds and a smaller one for twelve, besides a separation ward for two beds. The duty-room and bathroom are common to both large wards. The sanitary annexes each contain two closets and two lavatories for patients; and, in a separate compartment, the nurses' convenience and soil and washing sinks. The fourth or roof floor of the building contains two operating theatres, clinical lecture room, laboratory and X-ray department. The staircase block forms the main means of intercommunication between all parts of the buildings. Above the fourth floor it is carried up to form two floors of isolation wards, to which there is separate communication by a lift from the basement. These wards form a special feature of the hospital. It will be noted that, besides being lifted well above all surrounding buildings, each room has three of its sides exposed to the outer air. The sanitary conveniences are placed in the projecting turrets, and can be reached only from the wards by means of the open balconies. Attached to the block are a large boiler flue and a ventilating flue, and several small rooms at different floor-levels. There are two electric lifts in the well-hole of the staircase. The connecting passages of the three blocks on the upper floors are closed bridges. The buildings, including the nurses' home, out-patients' and casualty departments (the latter in the basement), are being carried out by Messrs. Holloway Brothers, Ltd., at a cost of between £80,000 and £90,000.



CHARING CROSS HOSPITAL: BLOCK PLAN SHOWING NEW BUILDINGS.



THE TOWER: PLAN OF 5TH AND 6TH FLOORS.

# THE VENTILATION OF THE HOUSE OF COMMONS.

### Select Committee's Report.

The Select Committee appointed to enquire into the ventilation of the House of Commons consisted of Mr. Dillon, Dr. Farquharson, Sir Michael Foster, Mr. Goddard, Sir J. Batty Tuke, Mr. A. H. Smith and Mr. Victor Cavendish (the two last serving in the place of Mr. Akers-Douglas and Mr. Penn). The arrangements for the ventilation of the debating chamber, with the division lobbies and other adjuncts of the House, are briefly as follows:—Air is drawn in by a fan in the basement from the terrace, at the level of the ground. After being washed, cooled or heated, according to circumstances (and in times of fog passed through a cotton-wool filter), it is driven through gratings, placed chiefly on the floor of the House and on the gangways, and rises to the ceiling. Thence by means of exhaust furnaces it is drawn chiefly into a shaft over the Commons lobby, but also through four down-pull shafts to the base of the clock tower, up which it is discharged.

Experiments showed that the air of the chamber, when about half the number of people which it will hold were present (the chamber will hold 691 persons seated), contained on an average about 4 volumes of carbonic acid per 10,000 volumes. The air of cities ordinarily contains about the same quantity, and the ventilating arrangements of a room are generally considered to be satisfactory so long as the proportion of carbonic acid in the atmosphere does not reach 8 volumes, though it is desirable that it should not exceed 6 volumes per 10,000. So far therefore as the amount of carbonic acid present is concerned, the air in the chamber is satisfactory.

The mean temperature is usually about 62 degs.; while the humidity varies from 60 per cent. to 72 per cent.

With regard to the supply of air, the observations made show that when the House is ordinarily full the supply exceeds the quantity generally estimated to be desirable, namely, 50 cub. ft. per minute per head; but there is reason to think that the present arrangements do not provide an adequate margin for a very crowded house.

From the above the Committee therefore conclude that the air supplied to the chamber is in quality most distinctly satisfactory. This conclusion, however, is not confirmed by members' own feelings. It is common experience that the air "lacks freshness," that there are some qualities possessed by it which cause lassitude and a feeling of heaviness. Moreover, the present system of ventilation seems open to the following serious objection—that the air in passing through the floor gratings becomes laden with dust.

The Committee had before them the following proposals for a complete change in the system:—

(*a*) *The so-called Plenum system*, consisting essentially in keeping the air within the chamber at a constant higher pressure than the air outside, the exit being provided for simply by the difference of pressure, the aid of an exhaust power not being called in. Mr. Key, who advocates this system, would apply it to the chamber by using the present channels and reversing the direction of the flow. He would take in the air from the terrace as at present, carry it to the ceiling, and allow it to flow out through the gratings on the floor, whence it would be carried to the clock tower. An essential feature of this system is that windows must not be opened, since the opening of a window, by affording an alternative outlet, interferes with the proper flow of air. It is urged on behalf of this system that the exit of air being effected by the higher internal pressure which is kept uniform, a large exchange of air is accomplished without giving rise to any draughts.

(*b*) *The exhaust system with flow from above downwards.*—This was advocated by Mr. Armitage. He would take the air by the present inlet, carry it to the ceiling and draw it through the floor by means of an exhaust power at the base of the clock tower. To establish the flow downwards he would trust entirely to the exhaust power, aided by some propulsion given to the incoming air by a special washing system.

(*c*) *The system of inflow at the sides, and outflow at both the roof and the floor.*—This was advocated by Mr. Francis Fox, who proposed to introduce by pressure air at a very low velocity along the sides, under the galleries and elsewhere, and to remove it by mechanical exhaust power through the floor and by the roof. The exact details, however, by which this could be effected were not given.

With regard to the first of these three systems, the Committee observe that it has the advantage of not creating a draught, but the flow is determined simply by pressure at the inlet, and the air makes its exit below the breathing level; whereas it is considered desirable that both intake and outflow should each have its own motive power. In addition there is the necessity that no doors should be left open longer than absolutely necessary for entrance or exit, a condition which would be very strongly objected to by members. The Committee therefore do not recommend the adoption of this system.

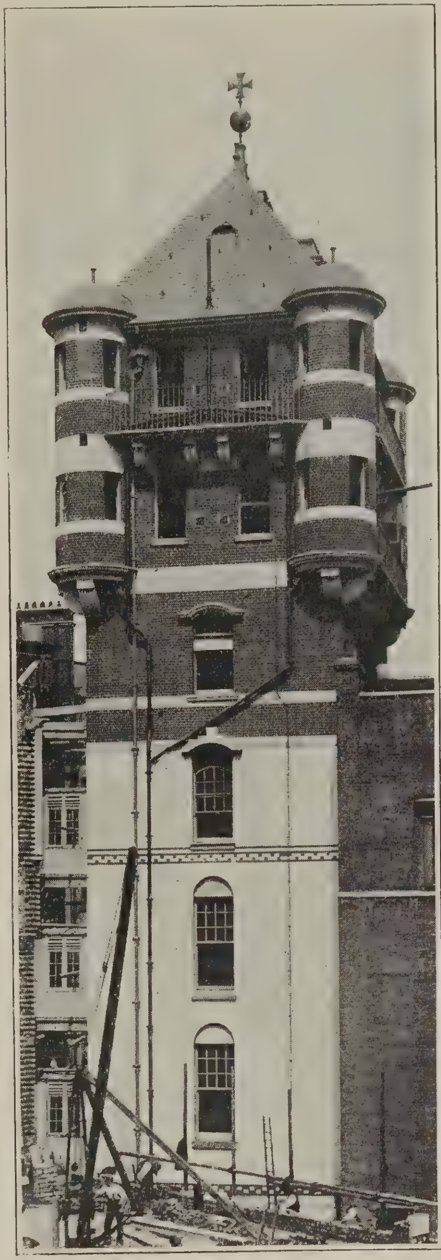
Passing to system No. 2, with the intake at the ceiling and the outflow by the floor, this differs from the plenum system chiefly as regards the distribution of motive power. It creates draughts and moves the air against the uprising vitiated air; moreover, it was formerly adopted in the chamber and given up as being unsatisfactory. So that this system is also set aside by the Committee.

With respect to the third, that of admitting air at the sides and removing it both by the roof and the floor, it is more difficult to speak in decided terms. Such a carefully arranged lateral flow from the sides, at about the level of the heads of persons present, would satisfy conditions as to carrying up the vitiated air, and at the same time would do away with what the Committee, in common with many of the witnesses, cannot but regard as a most objectionable feature of the present system—the inflow of air through the floor. But the Committee have not had before them satisfactory evidence that such a lateral supply could be brought about at such velocities and in such a manner as to be effective and yet not give rise to sensations of draught.

The result consequently is that the Committee cannot recommend that the present system should be immediately changed for some system by which air is admitted by the sides, and not by the floor. They emphasize, however, the necessity of experimentally enquiring into the possibility of adopting some other system. Meanwhile they suggest the following improvements:—

Since the air is more free from dust, microbes and other impurities at a level of about 10ft. or 12ft. from the ground than at the level of the ground itself, it would seem desirable that the intake should be at the former level rather than as at present. Such a higher intake could not, however, be effected without introducing a construction which would be an unsightly feature from an architectural point of view; and the advantages which would be gained by raising the level of the intake are, in the opinion of the Committee, too small to justify taking such a step. They think, however, that the inlet might be enlarged.

The channel for the ingoing air from the intake to below the equalizing chamber is most irregular, being broken by numerous projections, especially in its first part. The Committee would desire to see this passage transformed into a channel of as uniform a diameter as possible, lined with white-glazed tiles; but the expense of making it would be considerable: hence the Committee, while not prepared to recommend its construction at once, advise that steps should be taken to ascertain in what manner and at what cost the present passage may be transformed so as to make it as uniform and clean as possible. The present arrangements for washing and cleaning the passage are most imperfect, and these in any case should be improved at once by the introduction of a drain emptied by an electric pump so constructed as to render impossible any return of air into the passages through the drain.



THE NEW TOWER AT CHARING CROSS HOSPITAL.

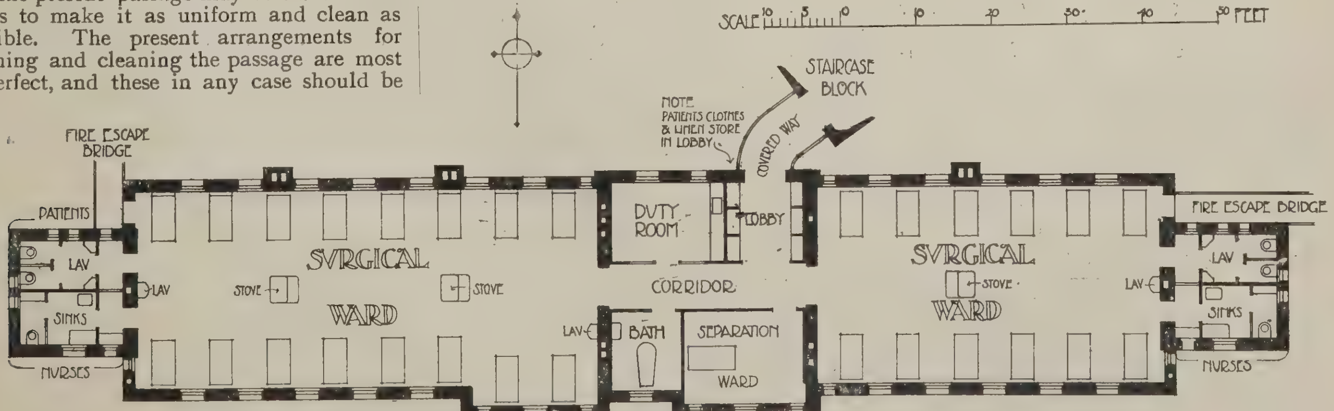
The evidence brought before the Committee showed that the means adopted for treating the air in its course along the passage are imperfect. The dry scrim-cloth serves a useful purpose in stopping a good deal of dust and may be retained, but the present method of washing by means of a water-spray should be replaced by that of a water-screen. The water-screens at present in use elsewhere are in most cases constructed of cocoa-fibre; these are objectionable on account of their retaining impurities and hence needing frequent cleaning or renewal; they are also liable to decay. The glass-tube screens advocated by Mr. Key did not recommend themselves to the Committee; but the wire-gauze screens suggested by Mr. Rivers are not open to the above objections, and the Committee recommend that trials should be made with these, with the view of their being adopted if on trial they prove satisfactory. The blocks of ice used for cooling the air in summer appear to be unnecessary and may be dispensed with. On the other hand, a preliminary steam-battery near the intake, for heating the ingoing air in severe weather, seems desirable. The Committee do not recommend that any attempt should be made to purify the ingoing air by ozone or by other chemical methods.

The cotton-wool filter is used only in the case of fog. After hearing much evidence for and against the use of this filter, the Committee have come to the conclusion that, even if it be not wholly effectual, nothing else can at present be depended upon as a means of stopping fog. They recommend therefore that it should be retained.

The present fan in the basement is imperfect, and the Committee recommend its replacement by a new fan of greater power driven electrically.

Though the Committee are not prepared to recommend at present that the inlet of air into the chamber by the gratings on the central floor and on the gangways should be abandoned, they are of opinion that an effort should be made to increase the area of inlet. Mr. Rivers proposes to effect this by allowing air to enter beneath the seats, the effects of draught being obviated by diminishing the velocity of the air-current with the help of wire-gauze screens placed below the floor. Such an entrance would especially assist in renewing the more or less stagnant air below the galleries; and the Committee recommend that a trial of Mr. Rivers's plan should be made in a restricted area under a limited number of seats. Should the trial prove successful in admitting air without leading to any complaints of draught the plan might be extended over the area of the seats generally.

Proposals were made to the Committee to meet the difficulty of the accumulation of dirt and dust in the matting over the floor by substituting a perforated layer of india-rubber. Such a layer would, how-



CHARING CROSS HOSPITAL: PLAN OF WARD FLOORS. ALFRED SAXON SNELL, F.R.I.B.A., ARCHITECT.

ever, have to be permanently attached to the iron grating. This appears to the Committee to be undesirable, and they cannot recommend the adoption of the plan. They think it best to retain the present matting, but they are of opinion that it should be removed and cleaned, if not every day, at least every other day, instead of once a week, as at present.

From the evidence placed before them as to the inefficiency of the present method of obtaining the exhaust by means of furnaces, and to the many drawbacks attending such a method, the Committee have no hesitation in recommending that steps should immediately be taken to replace this method by that of electrically-driven fans. They have further come to the conclusion that it is neither necessary nor desirable to take the outgoing air to the clock tower by the roundabout channel at present in use. They recommend that the main outlet should be through the shaft over the Commons' lobby, by means of a fan, but that the exit of air should be assisted by a second fan at the other end of the chamber driving the air up the shaft which exists near the ladies' gallery. Upon this plan, the system of ventilation of the chamber would be entirely cut off from the clock tower.

The chamber is at present lighted with gas from the roof. Since all the vitiated air is at once carried away (and, indeed, the heat from the gas assists in removing the air from the chamber) the only objection to such a system of lighting is the heat which is radiated downwards from the burners. An attempt to light the chamber by electricity, in 1883, proved a failure; but much progress in electric lighting has been made since then; and though the Committee are not at present prepared to make any recommendation, the matter appears to them worthy of attention. Every system of ventilation needs constant watching. Moreover, the knowledge of ventilation, though distinctly progressing, is far from being perfect; and the experience which might be gained by the careful and exact observation of what takes place in attempting to ventilate such a building as the House may confidently be expected to furnish further improvements in the future.

The recommendations of the Committee may thus be summarised:—

(i.) The substitution of electric fans for the present exhaust furnaces, one fan to discharge into the shaft over the Commons' lobby, the other into the shaft above the ladies' gallery.

(ii.) The simplification of the inlet passage and arrangements for its more thorough cleaning.

(iii.) The use of water-screens in place of the present water-spray.

(iv.) The adoption of the new improved more powerful intake fan.

(v.) The tentative introduction of air beneath members' seats.

(vi.) The more frequent removal for purposes of cleaning of the matting on the floor and elsewhere.

(vii.) The placing the whole of the cleaning arrangements under one authority.

(viii.) The appointment of a sanitary officer, under the Office of Works, to direct and superintend the ventilation of the House.

(ix.) The institution of the enquiry into problems of ventilation still unsolved, with the view of introducing further improvements in the present system.

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**Entrance to a Public Building.**—This design by Mr. W. Hilton Nash, of London, E.C., was exhibited at the Academy, and was a portion of a competition design for the new Town Hall at Harrogate. It was the main entrance to the council-chamber, which was placed on the axis of the building.

# Bricks and Mortar.

**Aphorism for the Week.**

*Architecture being grounded upon rules taken from the imitation of Nature, admits of nothing that is contrary or foreign to that order which Nature has prescribed for all things.*—PALLADIO.

**Our Plates.** SOME particulars of the new blocks at Charing Cross Hospital are given on p. 16 of this issue.—The drawing of the roof of Rheims Cathedral by Mr. P. R. Strong, of London, W.C., is self-explanatory. It is an interesting example of wooden roof construction.

**Statuary for St. George's Hall, Liverpool.** IT has already been stated in these columns that Mr. T. Stirling Lee is to be engaged to execute twelve figures above the panels on the front side of St. George's Hall, Liverpool, being part of the scheme of sculpture for the completion of the building. Mr. Lee himself says: "Since 1882 there have been twelve of the lower panels at St. George's Hall completed and fixed in position; eight of these are the work of my own hands, and four the work of fellow-sculptors. I feel now that the time has arrived when the committee should consider the subject of the completion, or at any rate the continuation of the whole scheme of the sculpture. The first point that comes before an artist is how few public buildings in England are complete; nearly all cities seem alike unconscious or indifferent to the vacant places left by the architect for decoration. This is particularly so on seeing St. George's Hall from Lime Street, the vacant pedestals, the bases waiting for their figures, and the uncarved stone all crying out for their enrichment before Elmes's grand hall can be called complete. The reason is, I think, that citizens become so accustomed to seeing a building that they accept it as complete, and it is only when their attention is drawn to these vacant places, and their part in the design pointed out, that they can realize that the building is unfinished. On looking carefully at St. George's Hall an enlightened visitor or artist will at once ask: 'Why are not the figures placed over the carved panels? Why are not those essential figures of light placed to break up the deep shadow of the screen formed by the pilasters?' My object is now to call attention to this part of the building, which should be next undertaken, for those figures form part of the original scheme drawn up and approved by the committee, and already twice sanctioned by the Council. The first series of panels previously mentioned was devoted

**The Series of Panels.** to the subject of the 'Growth of Justice,' and the figures above connected with them both by subject and design, the panels forming basis for the figures above—Panel No. 1, 'The Childhood of Justice'; figure above, 'The Spirit of Wisdom.' Panel No. 2, 'The Girlhood of Justice'; figure above, 'The Spirit of Council.' Panel No. 3, 'The Womanhood of Justice'; figure above, 'The Spirit of Strength.' Panel No. 4, 'Administration of Justice'; figure above, 'The Spirit of Justice.' Panel No. 5, 'The Result of Right Administration'; figure above, 'The Spirit of Peace.' Panel No. 6, 'The Immortality of Justice'; figure above, 'The Spirit of Eternal Light.' The second series, 'The Growth of Liverpool from a Fishing Village to a City': Panel No. 1, 'Liverpool a Fishing Village'; figure above, 'The Ocean.' Panel No. 2, 'Liverpool builds Ships'; figure above, figure of 'Navigation.' Panel No. 3, 'Liverpool imports Food'; figure above, figure of 'Commerce.' Panel No. 4, 'Liverpool imports Raw Material'; figure above, figure of 'Invention.' Panel No. 5, 'Liverpool exports Manufactures'; figure above, figure of 'Energy.' Panel No. 6, 'Liverpool a City'; figure above, figure of 'Citizenship.' The

**Material and Cost.** material to be used for these figures should be that in which the panels are carved—Istrian marble—some of which have now been placed nearly twenty years, and show no sign of weathering, but have, on examination, got a polish on the stone. These figures should be 8ft. 6in. high, and are so important that they should be personal work, so that a sculptor will have to work continuously and do little else to finish two in one year. The whole twelve figures will take six years, or nearly so, to finish. The cost of these twelve figures would be £500 each, or total £6,000; but the work taking six years to execute, the cost would be spread over that period of time, so that the annual cost to the Corporation would only be £1,000 a year. This, I feel, would be the best method to finish St. George's Hall, by a certain annual expenditure, until Elmes's design is completed, and Liverpool will have the grandest modern building in Europe. I need hardly say that I should like to be associated with the completion of my own work, both for my own sake and for my regard for this grand building; but should your Council wish to entrust the work to other hands, I should, of course, have to submit; but above all I feel concerned in asking the Council, through you, to do something further to complete this great work."

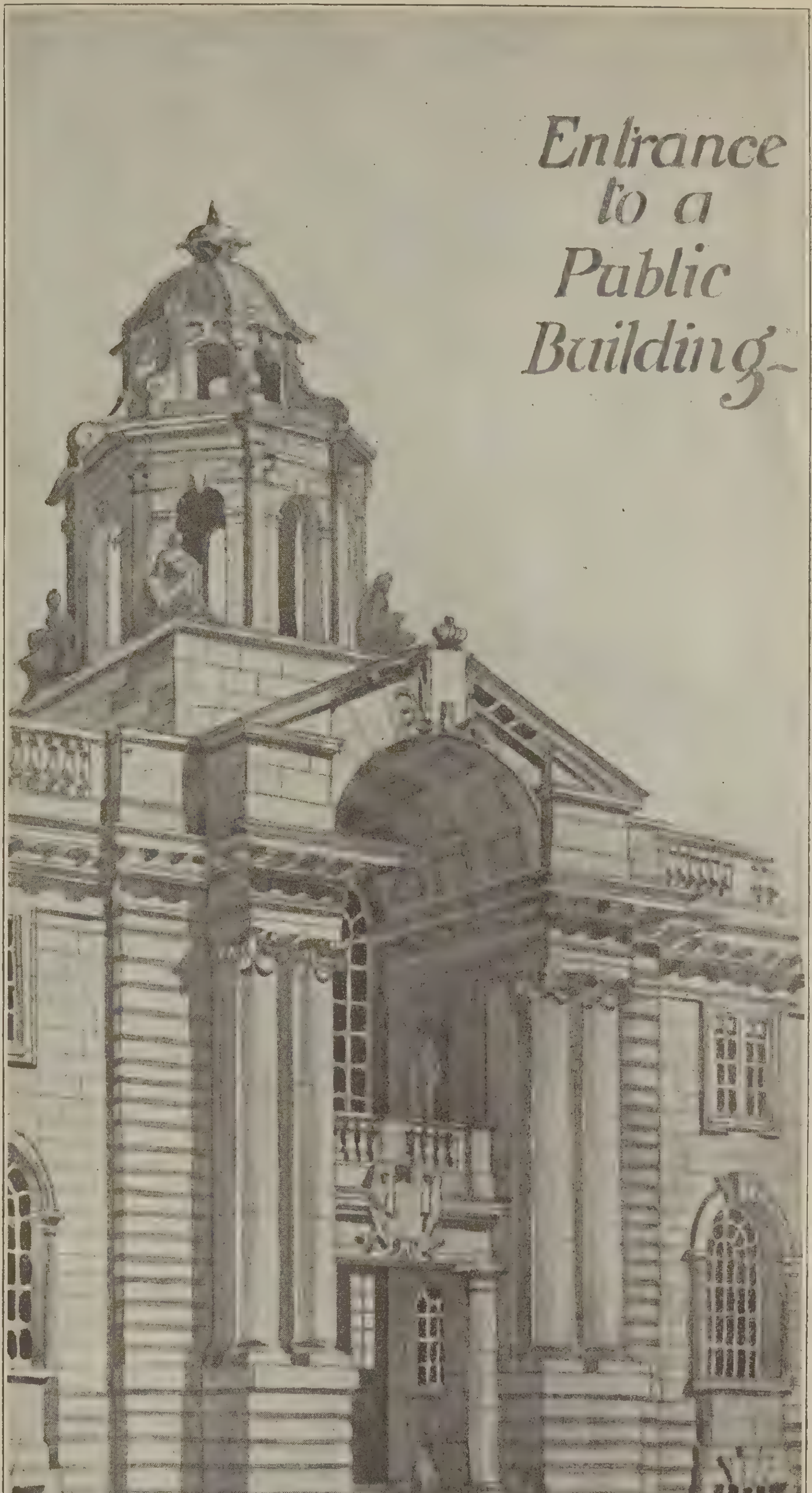
**The Ribs of the Aquarium.** LONDONERS are just now pretty well accustomed to seeing old landmarks disappear under the pick of the housebreaker but the demolition of the Westminster Aquarium presents some features of novelty. Little more than the ribs of this temple of fish and freaks are now left, and they fantastically suggest a gigantic model of the bones of the whale which for a brief time disported itself in the swimming tank, nearly twenty years ago. The removal of the northern walls is a task of considerable difficulty, for the designers of the Royal Summer and Winter Garden apparently built for posterity, and had no apprehension that their establishment would have so brief an existence. The stonework is remarkably solid, and is being removed with the aid of a large crane. It contains some good carving, the best of which is to be preserved.—(From the "Daily Chronicle.")

**A Well-known Theatre Architect.** THE Grand Opera House at Norwich was opened last week. Mr. W. G. R. Sprague is the architect. Mr. Sprague, it may be mentioned, belongs to an artistic family. His great-grandfather, Samuel Drummond, was an R.A.; his mother, who is still living, is well-known in connection with the stage; while his grandmother was artist to the Court of Russia. He started practice about fifteen years ago, and although still young he has probably broken all records in the building of theatres. In the year 1900 no fewer than eight designed by him were opened—six in London and two in the provinces—and within twelve months he had in hand the erection of thirteen theatres. The first "house" built to his plans was the Olympic in Wych Street, Strand, now demolished to make way for the new avenue being constructed by the London County Council. Adjacent to the site of the old Olympic Mr. Sprague is erecting one for Mr. E. G. Saunders—for whom he built the Coronet Theatre at Notting Hill Gate (remarkable as being the only suburban theatre which has been patronized by the King) and the New Camden Theatre, N.W.—and another for Mr. Murray Carson. A name for the former has not yet been decided upon, but the latter will be called The Playhouse.

Among the other theatres built by Mr. Sprague may be mentioned the Prince of Wales, Kennington; the Grand, Fulham; the Broadway, Deptford; the Duchess, Balham; New King's, Hammersmith; Shakespeare, Clapham Junction; Metropole, Camberwell; Lyceum, Sheffield; Lyceum, Newport, Mon.; an "Empire" for the Moss Syndicate at Bradford, Stratford and Holloway; the new theatre at Paisley; and the new Theatre, Lincoln.

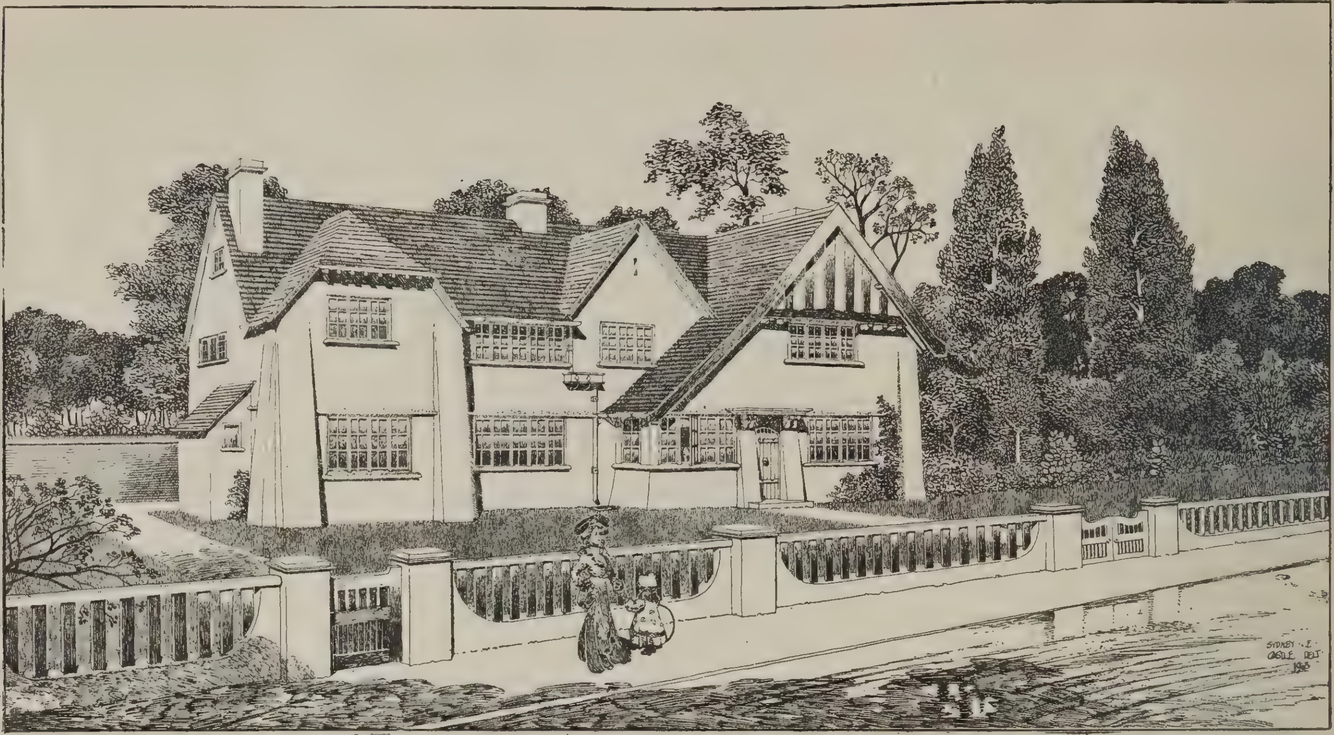
**Restoration of Corstophine Church.** THE parish church of Corstorphine—an edifice of pre-Reformation date, and one of the most interesting ecclesiastical buildings in the neighbourhood of Edinburgh—is to be restored. The church was built in 1429. It is of the Middle Pointed period of architecture, and is particularly notable outside for its quaint square western tower and roof of stone slabs. Alterations made to it in 1828 robbed it of some of its original interest. From part of the roof, for example, the slabs were taken and replaced by common slates; while internally the chancel was cut off from the nave by a stone wall in order to make it an entrance porch and to permit the building of a stair to give access to a couple of galleries which were then constructed over the east end of the nave, and an aisle on its south side, which is almost of the same width as the nave itself. The present scheme for the restoration is estimated to cost about £4,000, and will be almost immediately commenced, from plans by Messrs. Hay & Henderson, who restored St. Giles's, Edinburgh. The interior will be cleared out from end to end, and all the modern atrocities, dating from 1828, swept away.

**The New Naval College.** THE new Naval College at Osborne which was opened by his Majesty the King last week is near the public road from East Cowes to Whippingham. Plans were prepared by the Office of Works, Mr. H. N. Hawkes being the architect in charge. The contract was placed with Mr. John McManus, of Hammersmith; Mr. A. Trowbridge has acted as general foreman and Mr. A. Thompson (estate steward to Her late Majesty) as clerk of the works. A start was not made until May, and the work has been seriously handicapped by long spells of unfavourable weather. On an average 600 men have been employed. As at present arranged, between seventy and eighty cadets will go into residence about the middle of September and another batch in January. The several blocks are of one storey only. The cadets' dormitories already built consist of three blocks, in each of which there is accommodation for thirty persons. Arrangements have been made for the erection of six other blocks, to accommodate 180. The cadets' blocks are about 140ft. long, 26ft. wide and 13ft. high. Each dormitory opens into a spacious back room, which includes a plunge bath with a depth of 6ft. The sleeping apartments are light and airy. The walls are embellished with a green colouring to the dado, cream above, and the ceilings white. The extensive range of buildings which formed Her late Majesty's stables has been converted into a cadets' dining-room 97ft. by 31ft., with classrooms, professors' rooms, lecture-rooms, laboratories, &c. The gymnasium, which is about 170ft. long, 80ft. wide and 37ft. high, has a floor of pitch-pine. In this block is the recreation-room, 100ft. by 40ft., well lighted by a large circular window at either end. The different blocks are connected with covered ways, in which old oak is effectively employed. The water-tower block, which has a total height of 44ft., contains a massive tank, from which water, taken from the Osborne estate mains, will be supplied to the whole of the buildings. The officers' quarters, on the east side of the



Entrance to a Public Building

W. HILTON NASH, ARCHITECT.



HOUSE AT ROEHAMPTON, SURREY. A. JESSOP HARDWICK, ARCHITECT.

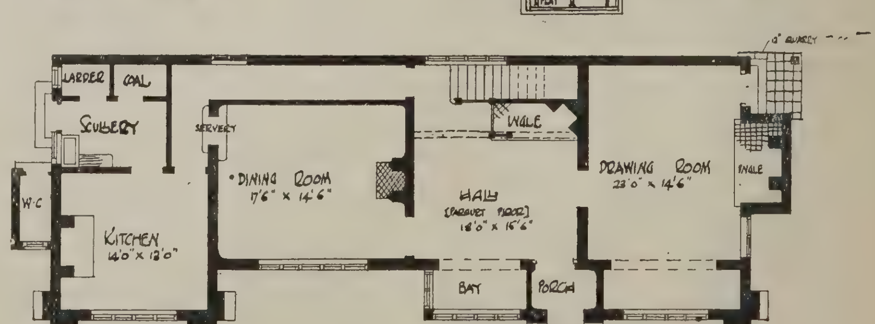
college, comprise thirty-five apartments, including mess. Two blocks are devoted to dormitories for the men comprising the College staff, for whom there is another block, including canteen, cookhouse, recreation-room, &c. All the buildings are of fir timber covered with Teralite.

**House at Roehampton.** THE house illustrated on this page is in course of erection in Nepean Road, Roehampton, for Mr. T. D. McMeekin. The walls will be white rough-casted, and the roofs tiled with Leatherhead tiles. Mr. A. Jessop Hardwick, of Kingston-on-Thames, is the architect, and Mr. E. D. Hobbs, of Thames Ditton, the builder.

**The Colours of Stained Glass.** MR. WALTER ROSENHAIN points out that the loss of the secret to produce the tints of old stained glass is not indeed a loss, for the secret was never ours, but was always one of Nature's. Glass changes its colour under the influence of light, as anyone may perceive who will glance upward at an old railway terminus roof and notice how some of the panes have changed from their original greenish tinge to yellow or even pink. A large number of experiments have been made on this subject, and Professor Gaffield has carried out a series of tests, lasting in some instances over thirteen years. He found changes of colour, in what may be termed "white" glasses, as follows:—From white to light yellow, light green to yellowish green, brown and greenish yellow to various tints of purple, light green to light blue, and in some cases merely a deepening of the original tint. In the majority of coloured glasses he found little alteration, except in violet and brown tints. Nevertheless, when ancient coloured glass is removed from its setting it is often found that portions of the glass which have been protected from the light are of a different tint from those portions which have been freely exposed. There can be little doubt, therefore, that we do not now see ancient glass windows with the colours they originally possessed. The change of colour is probably due to a change in the state of oxidization of the manganese and iron present in the glass. Professor Currie recently showed that the rays from radium have a powerful and ready effect in changing the colours of certain glasses.

**Yarmouth Hippodrome.** THE architect of the new Hippodrome at Great Yarmouth is Mr. R. Scott Cockrill, A.R.I.B.A. The building has a frontage to the Marine Parade over 100ft. in length, and is treated in the free style of the Renaissance in terra-cotta and red brick. There are five entrances under the four towers which form so conspicuous a feature of the building; these towers are placed at regular intervals, with large semicircular arches thrown between them. The interior accommodates about 4,000 people and has a span of 98ft. There is a sinking ring, which forms a tank 40ft. in diameter and 8ft. deep, for the production of water pantomimes and other aquatic spectacles. The building has been erected by Mr. John Youngs, the ceiling (which is of fibrous plaster in relief) is the work of Mr. J. Crotch, and the electric lighting is by Messrs. C. Payne & Co.—all of Norwich.

**Tavistock Parish Church.** THE parish church of Tavistock has been extensively renovated and improved. Dedicated to St. Eustachius, the church is of unusual size, giving accommodation for about 1,000 people. At different times it has undergone restoration and repair, the most important alterations being made in 1844-45, when the eighteenth-century galleries and pews were removed and the building re-lighted and re-seated. Mr. G. H. Fellowes Prynne, F.R.I.B.A., has been the architect employed in the recent work. The nave and aisle have been entirely re-floored. The roofs have been thoroughly overhauled, and defective ribs and wall-plates and carved bosses made good or renewed. New figures of angels have been placed in the position in which similar figures formerly



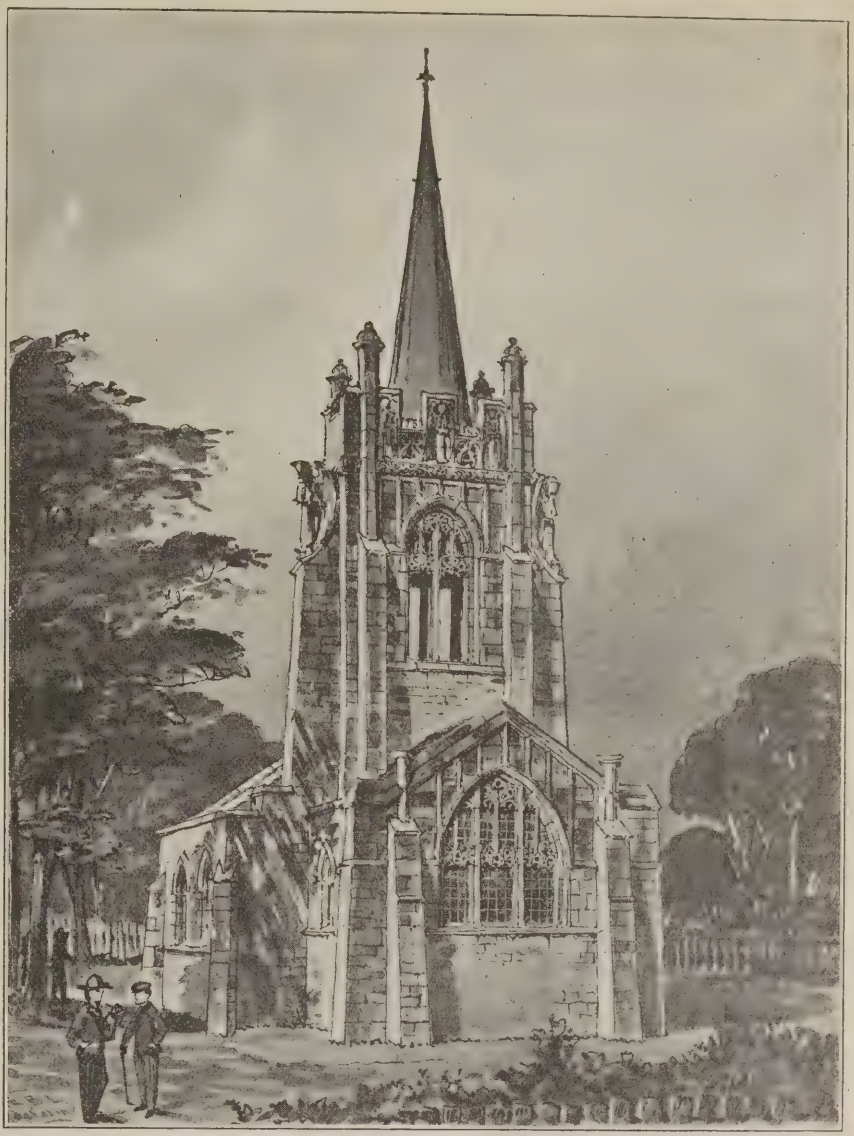
GROUND- AND FIRST-FLOOR PLANS OF HOUSE AT ROEHAMPTON.

stood. The lead gutters have been repaired and invisible roof ventilators inserted over the nave and aisles, as well as an opening made in the wall above the chancel arch. The church has been re-lighted by brass pendants hung from the roofs, and the seating has been altered and re-spaced so as to allow of comfort in sitting and kneeling. The contract has been in the hands of Mr. J. A. Dennis, of Tavistock. The cost has reached a total of £1,500.

**Chapel to Convalescent Home.** THE proposed chapel to a convalescent home for widows of clergy illustrated on this page forms part of a scheme in progress of development, the founder of which is the widow of a clergyman. The site is at present not finally settled. The chapel is to be of stone outside, with oak seats, wood-block floor to nave, marble squares in chancel and an oak rood screen and triptych. The roof will be of oak, groined and covered with green slates. Mr. E. B. Lamb, of London, W.C., is the architect.

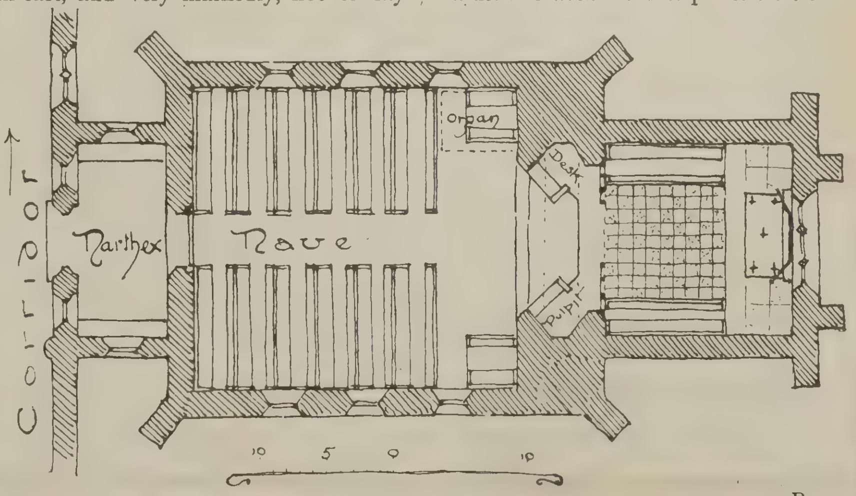
**Manchester Architects.** THE Manchester Society of Architects recently visited Messrs. Cadbury's village of Bournville, outside Birmingham. Mr. W. A. Harvey, the architect, showed the party over the estate. Several houses were examined throughout, and the nearly completed Ruskin Hall was much admired. It was thought that the great success, both social and architectural, of this experiment should do much to encourage similar schemes elsewhere. Returning to Birmingham, the fine church of St. Agatha was visited under the guidance of Mr. Bidlake, the architect, and also Messrs. Keep's warehouse, a refined piece of work by the same architect. The day was concluded by a visit to the Eagle Insurance Co.'s offices (Messrs. Lethaby & Ball, architects), where the interior, with its beautiful marble and plasterwork, was especially admired. Later, some of Mr. Edgar Wood's work at Middleton was visited. The Old Road Chapel has lately been decorated by the architect and Mr. Jackson, the painter, and has a charming internal effect of rich colouring. The new Wesleyan Chapel is an excellent piece of grouping, arranged picturesquely round a cloister or courtyard. Mr. Wood's own house is full of interest, and the formal garden he is developing shows what good results can be got on a very small scale.

**Mr. Gow's Fresco.** THE new fresco which was recently unveiled in the ambulatory of the Royal Exchange is the work of Mr. A. C. Gow, R.A., to whom the commission was given by the committee of Lloyds. The subject is "Nelson leaving England for the last time" on the eve of Trafalgar, and the artist shows the great admiral in the act of descending a wooden staircase leading from Portsmouth Hard to the water's edge. The picture, upright, like all its companions, is about 18ft. high by 10ft. in breadth. The extreme foreground is occupied by a portion of the admiral's barge, in which sit two or three typical Jack Tars holding their long white oars vertically as they wait for their chief. On the landing stage are the coxswain, holding the barge, and a little group of naval officers, who lift their hats as Nelson approaches. At the top of the stairs two sentries in scarlet coats and white breeches keep back the cheering crowd, above whose heads droops the Union Jack, suspended from the walls of a grey building in the background. Mr. Gow's fresco is painted in a high bright key. There are still many vacant panels on the walls of the ambulatory, but Mr. Abbey, Mr. Yeames, Mr. Brangwyn and Mr. Harcourt are engaged on pictures that will fill four of these spaces, and a fifth is already completed—that of Mr. Chevallier Tayler.



PROPOSED CHAPEL TO CONVALESCENT HOME FOR WIDOWS OF CLERGY. E. B. LAMB, ARCHITECT.

**The Wellington Memorial in St. Paul's.** "SPECTATOR," in a letter to the "Times," says: "The monument stands under an arch of the north aisle, and faces the east. Thus the positions from which it is visible range from the dome, south-east to south. The narrowness of the aisle and the massiveness of the piers prevent any view from east or north-east. Yet the Duke is so seated on his horse that he inclines to the left—*i.e.*, to the north-east—and the effect of this inclination is intensified by the action of the arm and cloak, which also incline to the north-east, and very markedly, not to say obtrusively, catch the light . . . The left bend of the figure suggests that it ought to have been placed in the south aisle. Be this as it may, its position cannot now be altered, and it only remains to do what is possible. Having this in view, let us not place the leading feature, which crowns the whole, in a position which would turn the portrait statue so as to be all but out of sight, and would, in my view, be out of harmony with the sub-structure. It may be that the horse is too large for the base, and that its head and forequarters may not harmonize with the hindquarters . . ."



# THE LATE J. F. BENTLEY.

### A Biographical Sketch by his Daughter.

[A most interesting biographical sketch of the late J. F. Bentley, written by his daughter, Miss Winifride M. Bentley, was published recently in the "Catholic Fireside." Through the courtesy of the editor of that publication we are able to give the following reprint of it.—Ed. B. J.]

JOHN FRANCIS BENTLEY was a Yorkshireman, his father being a wine merchant in the old town of Doncaster. Here was he born, in a quaint old-fashioned house in "French Gate," on January 30th, 1839, the third son of a very numerous family. It is perhaps curious and worthy of note that the artistic talent with which nature so generously endowed him had found no earlier exponent in his family. The bent of his genius was exhibited in early boyhood, and the extent to which he had cultivated the "seeing eye" was proved by a model made in wood and cardboard when he was only about fourteen years old. The magnificent ancient parish church of St. George, under whose shadow, literally, he had dwelt, was the pride of the townspeople. It was on the 28th of February, 1853, that they observed with consternation that the building was in flames. Those were the days of primitive fire-extinguishing appliances; with ready will hundreds pressed forward to the task of subduing the fire—but such efforts were futile against the high wind that encouraged the rapid destruction of the fabric. Little John was called from his bed, on account of the danger to the house from the flying sparks, to see the sky illuminated as by a mighty bonfire, the conflagration of his first silent teacher of art.

As rapidly as possible funds were raised for the rebuilding of the church, and to this end a bazaar was organized. The boy was anxious to help, and he made, chiefly from memory, a complete model of old St. George's. The tiny church was much admired, and was sold for five guineas—but it, unfortunately, met the same fate as its original, when it was illuminated interiorly and exhibited at the bazaar. So great was the disappointment at the destruction of the boy's work that his father at once insisted that he should make another model from memory—and he was kept perforce at the task till it was finished, that no detail might be forgotten. As this church had been his first influence, so was it his second. Sir George Gilbert Scott was commissioned to rebuild the church on the old site, and while the works were in progress John Bentley was allowed free access to them and to the clerk of the works' office, where he sometimes helped to set out work. He was already well known in several joiners' workshops by his evidence of quick intelligence and practical interest.

The boy's great desire at this time was to become a painter; but his father's practical and business-like nature was firmly opposed to the idea. To enforce his objections he pointed out to his son the miserable hand-to-mouth life of a poverty-stricken artist of their acquaintance, while he determined to set his feet on a surer road. He allowed John, however, to leave school when he was sixteen, and to employ his time in voluntarily superintending certain repairs at Loversall Church, where some of the wood-carving was done by his own hand. Then he decided that his son should become a mechanical engineer, and he actually "donned the moleskins" for a short time in the firm of Messrs. Sharpe, Stewart & Co. at Manchester.

Other counsels prevailed, and eventually in the summer of 1855 John Bentley came to London with his father (they had previously visited it together, in the Great Exhibition year, 1851), and was articled to the building firm of Messrs. Winsland & Holland for a term of five years. In the November of the next year, 1856, the boy was deprived by his father's death of his advice and assistance, but he continued to work steadily at his new employment. Mr. Richard Holland took considerable and kindly interest in the young pupil, and when he found that he was developing talents which clearly fitted him for a wider field he wrote to his mother suggesting that he should release her son from the remaining time of his indentures and place him in the office of Mr. Clutton, the well-known architect. The transfer was duly effected, and at last the boy was within reach of his longing for the possibility of artistic expression.

His powers rapidly developed in this new *milieu*, and in 1862 he left Mr. Clutton's office, in spite of an offer of partnership from that gentleman, to take rooms for himself in Southampton Street, Strand, there to begin independent work. He exhibited in the great London Exhibition of that year several designs for metal-work and some works carried out from his drawings, and five years later sent a design for a stained-glass window to the Paris Exhibition. He attracted attention and received appreciation for these exhibits of 1862; several life-long and valued friendships dated from this time.

Catholic influences came into his life while he was working in Mr. Clutton's office, and his conversion in 1861 was the result of long thought and profound conviction. He was baptised in the Church of St. Francis, Notting Hill, where the font, his thank-offering, testifies to his gratitude for this grace. He accepted Catholic teaching and discipline always in its strictest sense. Throughout his first Lent as a Catholic, owing to a misunderstanding of the Lenten Indult, he abstained altogether from flesh-meat. He was especially zealous in the proper observation of Friday, and always objected to theatre-going or entertaining on that day. Work came to him in those days steadily if slowly, and he made use of every moment of time. Friends who called at his rooms in the evening would find him still at work and, to quote the words of one of them, "forced to admit frequently that he had not been out all day." The commissions that were given to him, small though they were at first, were carried out with all that minute attention to detail and that giving of his best and only his best which have set their seal on all the children of his brain, from the greatest to the least.

### Early Works.

Among records of his works at this period we find mention of the font, baptistery and porch at St. Francis's, Notting Hill; there are some altars here, too, from his designs. A little later he built commercial premises in the City and a house at Sydenham for the late Mr. W. Sutton. Then came many ecclesiastical works—an altar and reredos of alabaster for St. Charles's, Ogle Street, additions and a chapel to a convent at Taunton, organ-cases, church-plate and vestments. In 1866 he adapted most successfully an old Sussex house named "Heron's Ghyll" for Coventry Patmore, the poet.

Two years later his opportunities widened and he received a commission from Cardinal Manning to prepare designs for a seminary at Hammersmith, to be dedicated to St. Thomas. The careful supervision of this "dignified and simple" work occupied much of his time in the four years following. The seminary was after a time removed from this building, which has been occupied for some time by the Nuns of the Sacred Heart. In the June of 1868 he found it necessary to move into larger and more convenient offices at 13, John Street, Adelphi; but he was not without regret at leaving the scene of his first efforts and the spot in which so many friendships had been cemented. The diaries of the years immediately following tell us that he was always much occupied with work, in the same painstaking wholehearted manner. The first month of the year 1874 brought him the keenest sorrow, in the death of his mother, to whom he was most devotedly attached. She told him on one occasion that he had never caused her one moment's anxiety or pain, and these words remained with him all his life, as a most happy remembrance.

In the same year he met the lady who was to become his wife. Their acquaintance began in July, at the house of a mutual friend at Hampstead, and three months later, on October 6th, they were very happily married at the Church of SS. Peter and Edward, Westminster. At this time John Bentley was engaged on some congenial work. The internal remodelling of Lord Beaumont's house, Carlton Towers, Yorkshire, had been entrusted to him, and he was allowed a free hand. In the result, the most beautiful decorations, including the designing of velvet and woollen hangings, furniture and stained glass, justified the confidence placed in his taste and ability. The Venetian drawing-room, with its richly adorned ceiling, frieze and fireplaces and cabinets containing old china and glass, calls forth great admiration.

The year after his marriage he built a Catholic church and presbytery at Chelsea, and in 1880 one at Kensal New Town. The year 1885 saw the commencement of the stately Church of Corpus Christi at Brixton. Only its eastern end was then erected, an arrangement being entered into whereby the building was to be completed as funds were forthcoming. It was one of the architect's great disappointments that he never saw this church finished, though he did much towards beautifying what existed by his stained-glass windows dedicated to the Sacred Heart, to Our Lady (who is shown prefigured in her Old Testament types) and to St. Joseph. He had been connected in quite early years with the Redemptorist Fathers at Bishop Eton, and had designed at different times an altar, a pulpit and various additions for Father Edmund Vaughan. His first work for them at Clapham was the building and decoration in 1883 of the Chapel of Our Lady of Perpetual Succour, in the Church of St. Mary—an exquisite shrine of Faith and Art. Ten years later he repaired the stonework of the steeple, which had become much weathered, and was a work both costly and difficult. He also enlarged the church by means of a transept on the north side, and built a large monastery. The church possesses several stained-glass windows of his designing; the tabernacle of copper and brass, skilfully employed together and enriched with lapis-lazuli, mother of pearl and precious stones, has been completed since his death; and he also left a design for the sanctuary screen of wrought-iron, which has since been carried out. One-half of this screen was erected as a memorial to the dead artist in the church he loved so well that he fixed his abode close by it for nearly twenty-eight years.

### Church of the Holy Rood, Watford.

At the same period, 1893, he was engaged on the drawings for the Church of the Holy Rood at Watford, a votive offering, the generous gift of Mr. S. Taprell Holland to the archdiocese of Westminster. It is a fine Gothic church; the sanctuary is enriched with mural paintings of saints and angels; the high altar is of marble, inlaid with lapis-lazuli and pearl, and bears a tabernacle of gilt bronze, lapis and pearl. The electric-light fittings are very original and beautiful, and are made of gilt copper. On the north side is the chantry chapel of the founder, dedicated to the Holy Ghost, and enclosed by a screen of gilded metal-work. In 1900 the church, with its tower, was complete, and the consecration ceremony was performed

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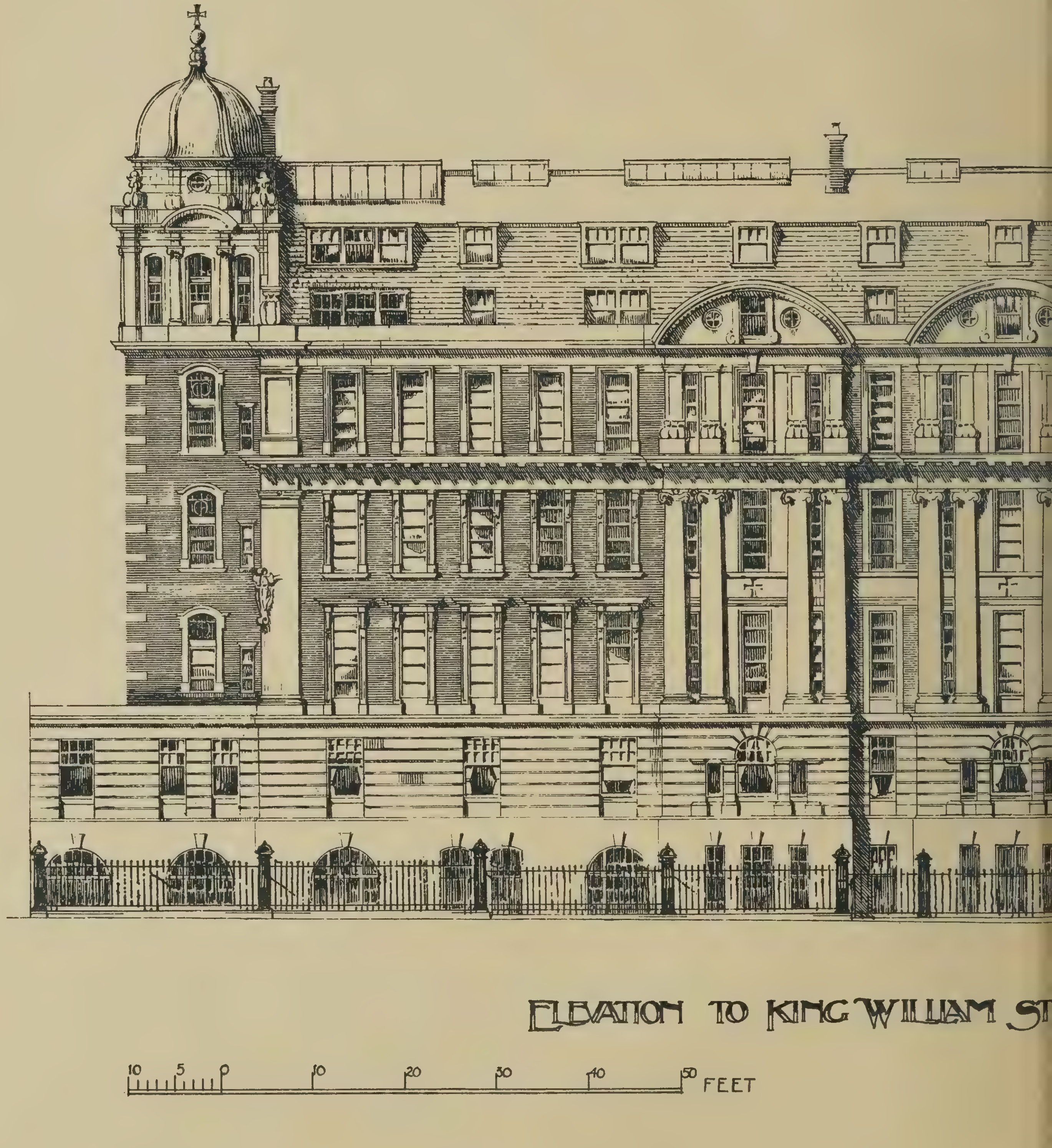
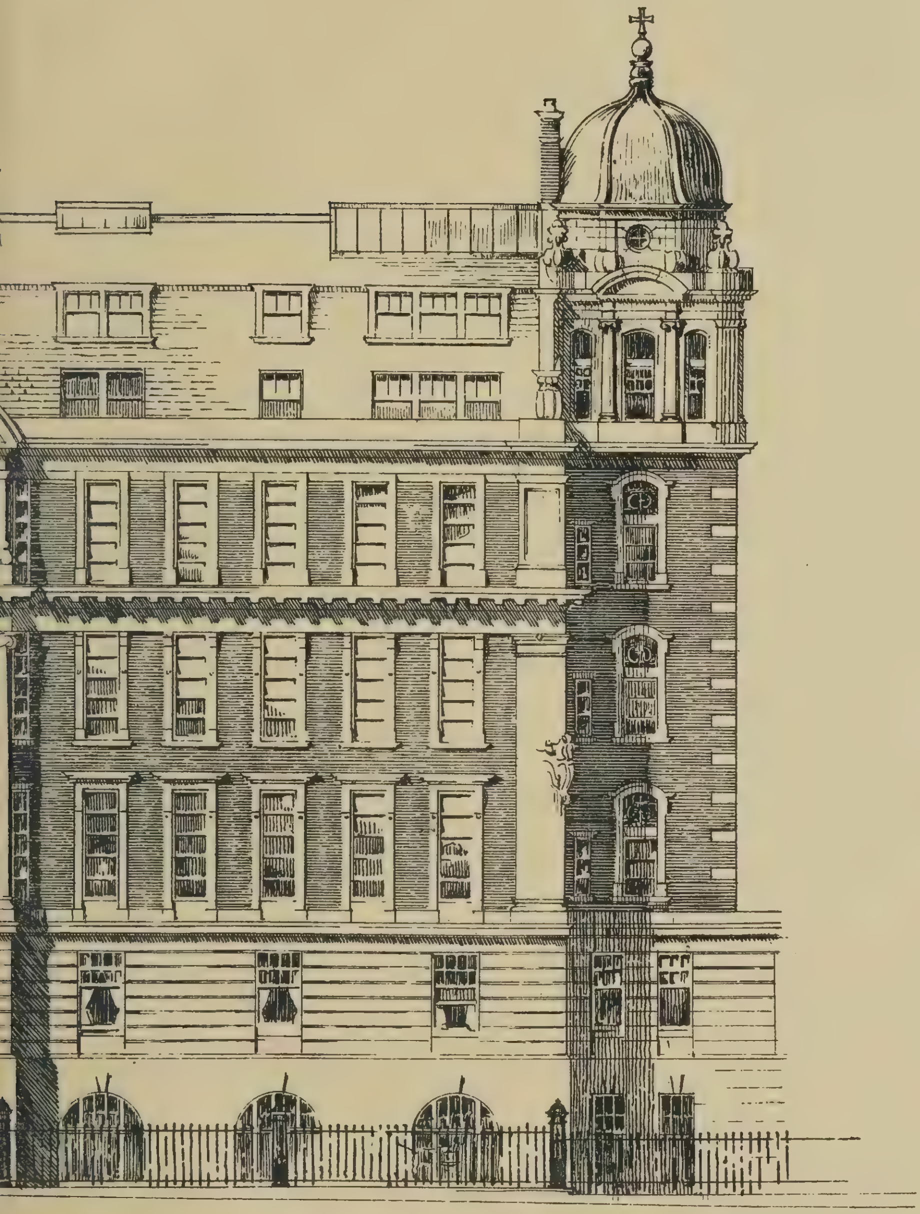


NEW SURGICAL BLOCK, CHARING CROSS HOSPITA



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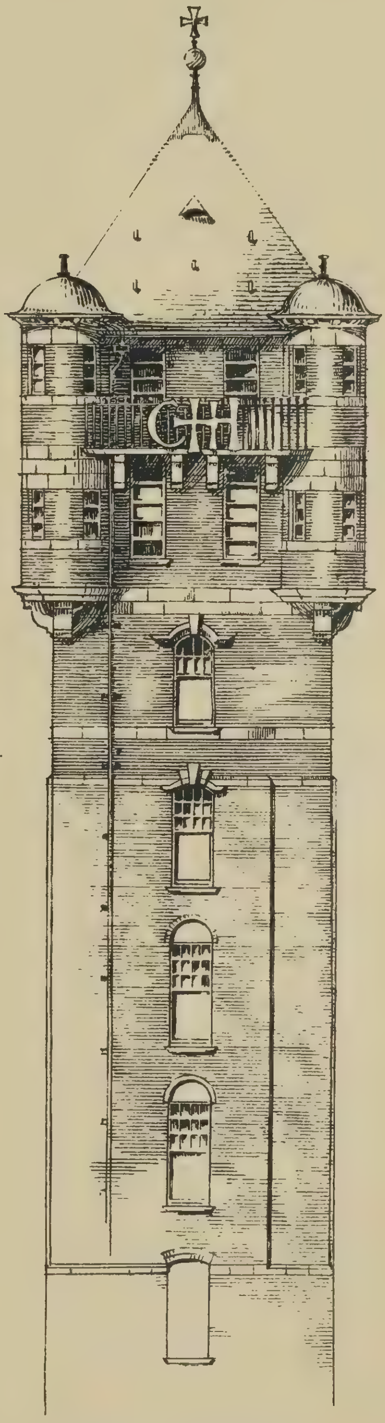

THE TOWER

NDON.    A. SAXON SNELL, F.R.I.B.A., ARCHITECT.

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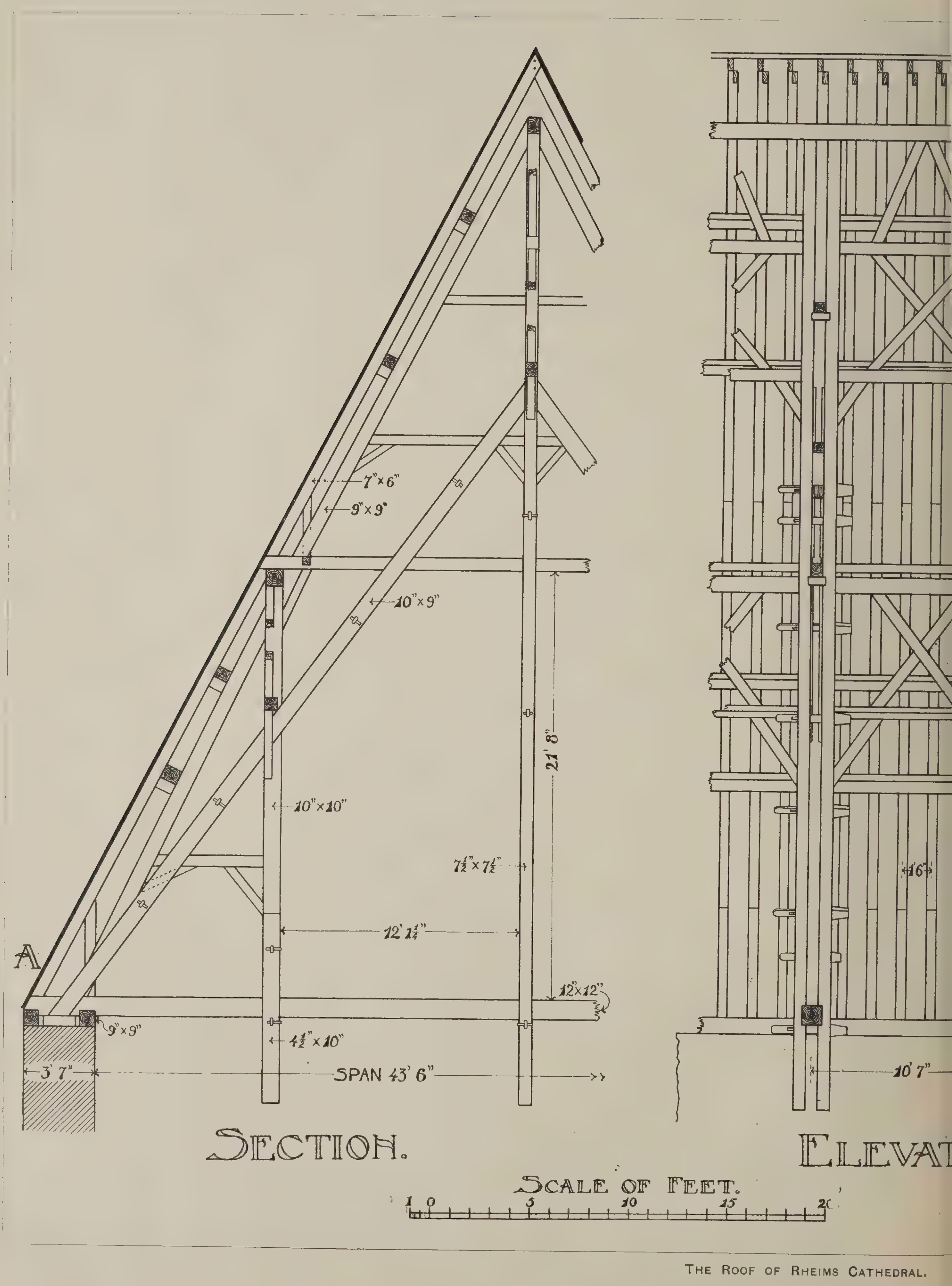
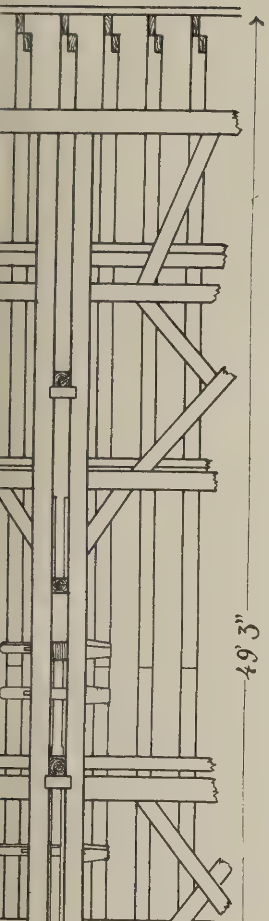
THE BUILDERS' JOURNAL AND ARCHITECTURAL RECOR
*Wednesday, August 12th,* 1903.



THE ROOF OF RHEIMS CATHEDRAL.



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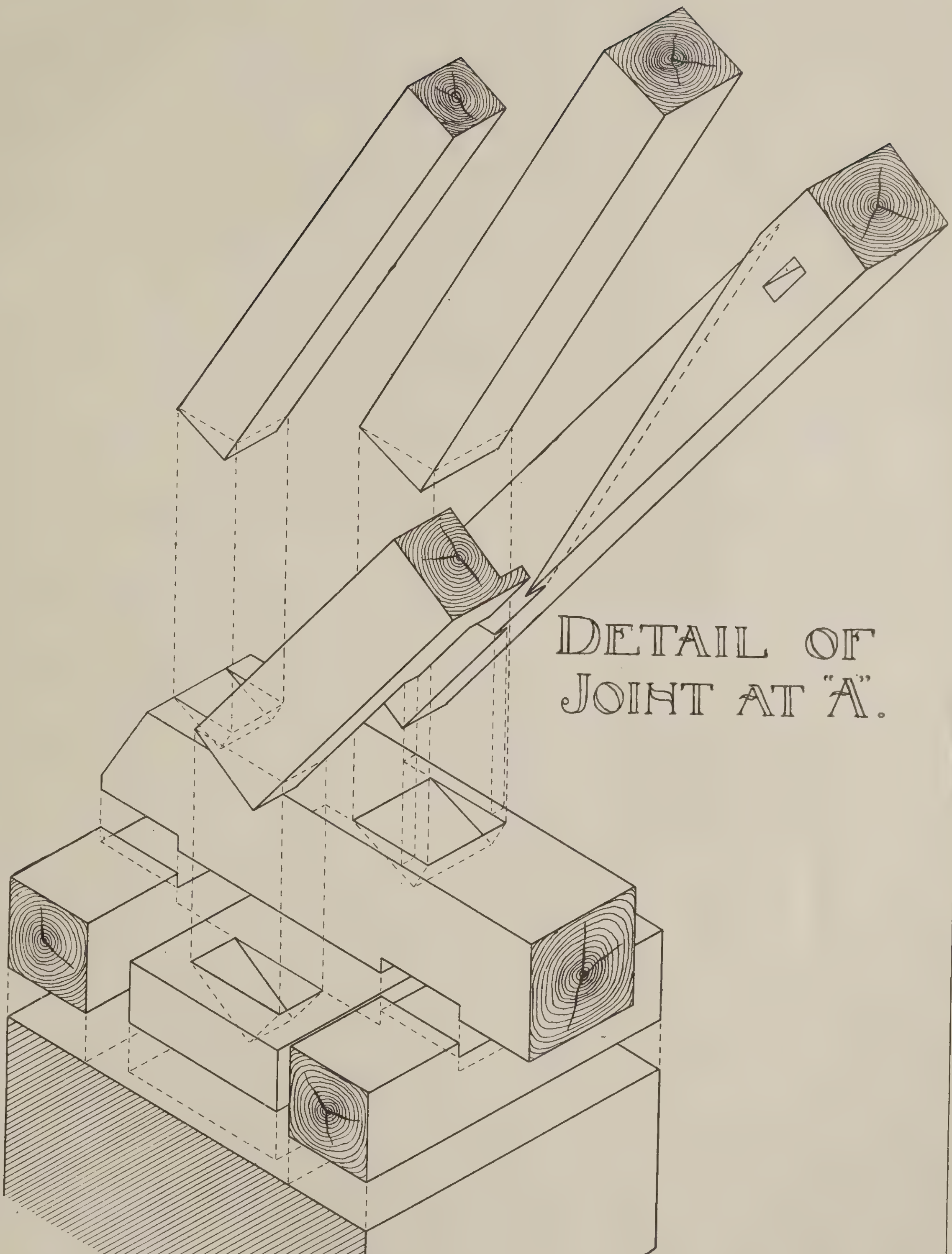

DETAIL OF
JOINT AT "A".

ASURED AND DRAWN BY P. R. STRONG.

LIBRARY
OF THE
UNIVERSITY OF ILLINOIS

by Bishop Brindle in the month of June. A presbytery and schools had been built adjoining the church.

### Beaumont College.

The Preparatory College of St. John, Beaumont, was begun in 1884, and has obtained much praise; the entrance-hall is a striking feature, with its tessellated marble floor and stained-glass windows, depicting the most well-known of our English martyrs. The year 1893 was a busy one; and he was unfortunately handicapped by serious illness. Influenza and bronchitis laid him low for many weeks in the winter, and before convalescence was complete he hurried to the north on business. Several hours' work in a cold church, on a treacherous spring day, were too much for his feeble health, and he returned home to keep his bed for many weeks with a severe bout of peritonitis. Careful nursing alone saved his life, and the weakness resulting from this illness was for long a sad trial of his patience.

The two City churches of the title of St. Botolph, in the wards of Aldgate and Bishopsgate, needed restoration. The task was offered to Mr. Bentley, and being accepted was carried through in both cases with a care and reverential feeling for these interesting old buildings which made his success a certainty. His work gave such satisfaction to the Rev. Mr. Hadden, vicar successively of the two churches named, that when he accepted the incumbency of St. Mark's, North Audley Street, he again sought Mr. Bentley's help in the restoration and decoration of his church. The marble lining to the chancel and the marble paving, besides external and internal repairs, have much beautified it.

### A Casket to the late Sir Stuart Knill.

In 1893 he designed a silver-gilt casket, destined for presentation to Sir Stuart Knill, the Lord Mayor of that year. This graceful production of the silversmith's art is adorned with twelve ancient figures of saints, "parcel-gilt," and with the emblems of the Ducal House of York, it being the marriage year of the Duke of York with Princess May. The heraldic shields are those of Sir Stuart Knill and the City of London. The casket contains a richly-illuminated address from the Lord Mayor's fellow Catholics, and is enclosed in an oaken case to which a peculiar interest is attached. The wood of which it is made was taken from the old roof of the Guildhall of the City of London, removed in 1864. The City Surveyor says of it that "it was placed there by Sir Christopher Wren, after the Great Fire, when the original roof was destroyed; it may be that this piece is from the original roof, as much of the old timber was used by Wren."

### Westminster Cathedral.

In the year 1894 John Bentley met the great opportunity of his career. For many years the diocese of Westminster had been in possession of a large site, on which it was proposed as early as 1867 to build a cathedral worthy in beauty and size of the metropolis of the world and its Catholic archdiocese. For various reasons Cardinal Manning was unable to proceed with the plan, and it fell to his successor to initiate and carry out the work. A competition by Catholic architects was suggested, nay, even partly arranged, and a certain few were invited to send in drawings. This method of obtaining a suitable design put Mr. Bentley quite out of court, for he had always, on principle, refused to compete with his fellow-architects. Indeed, he considered the practice disastrous to art. The idea of a competition was, however, set aside, and a sort of consensus of opinion was taken among the architects themselves as to whom they considered the "best man" to undertake the work. Their choice fell with unanimity on John Bentley. Cardinal Vaughan sent for him, and, while laying down certain conditions as to style and size, left the issue confidently in his hands.

As the result of much thought the Cardinal had decided that his new cathedral should be Byzantine in style, that is to say, it was to be built in the manner in which the early Christians built their basilicas. The architect would have preferred the Gothic order, to which he had devoted himself for so many years; but subsequently he came thoroughly under the spell and possibilities of the Byzantine, and acknowledged that the Cardinal was right.

It was ever his practice not to set pencil to paper till his plans had acquired definite shape in his mind and he could see, with the mind's eye, the finished state of his contemplated work. In the case of the Westminster Cathedral, and in order to do justice to his great opportunity, he spent nearly four months in Italy, making a thorough study of the—to him—untrodden ways of Byzantine art.

Provided by his Eminence with a circular letter of introduction, he left England on November 22nd, 1894, travelling by the St. Gothard route to Milan, his first stopping place. Here he spent a few days, and was courteously shown every detail of the elaborate Gothic cathedral by the architect in charge of the fabric. He passed on to Pisa, thence to Florence, on a visit of some days' duration, charged with keenest enjoyment and appreciation, and so on to Rome. He found pleasant quarters in the Hôtel d'Angleterre, and spent many profitable weeks in the Eternal City, studying its ancient and mediæval monuments, and making a considerable number of friends. He was admitted on one occasion to the Pope's private Mass, and to the further privilege of a conversation of some ten minutes' duration with his Holiness, who held the artist's hand in both his own, and, speaking in French, blessed his new work and wished him success. Mr. Bentley was also present at the solemn Requiem sung in the Sistine Chapel for the late Pontiff, Pius IX.

Christmas was spent in Rome, and early in the New Year he made a brief stay in Naples, visiting Pompeii and making the ascent of Vesuvius, in company with two Americans, during a heavy fall of snow. He returned to Rome to make his farewells, and then continued his tour to Assisi, the birthplace and home of St. Francis, his name-saint in Catholic baptism, to whom he had always felt a special devotion. His journeying led him on to Perugia, where he found the snow piled high at the sides of the streets, and an "old inhabitant" informed him that a parallel winter had not occurred within his memory. He had suffered intensely from the cold since leaving Rome; and, after visiting Ravenna, he reached Venice towards the end of February, thoroughly worn out.

He wisely fortified himself at once by a complete rest before devoting his attention to the beauties of the city of the once-famous Republic, Venice, the "Bride of the Sea." His intention had been to proceed from Venice to Constantinople; but, learning that cholera was very prevalent in the latter place, he deemed it unwise to run any risk, and so turned his face homeward.

After a few days spent in Turin, in the second week of March, he travelled through Dijon to Paris, and remained in that city a short space, reaching home on March 19th, to begin, with the smallest possible delay, actual work on the Westminster Cathedral.

When the plans had attained maturity in his brain the labour of committing them to paper was swiftly proceeded with. The first designs met with the Cardinal's approval, and it was decided that the important inaugural ceremony of laying the foundation-stone should take place on the 29th of June, the Feast of Saints Peter and Paul. Two committees were chosen to manage respectively the liturgical and the more mundane side of the arrangements; the task of superintending the erection of covered stands on the site, to seat a very large number, devolving on Mr. Bentley. The stands on the Gospel-side of the altar were occupied by holders of tickets for the religious ceremony only, while facing them sat the members of the Press and those who intended to be present at the luncheon, which was served after the morning's ceremonies in an enormous marquee specially made for the occasion. The large number of people who were willing to stand throughout the service, in order to be present on so important an occasion, were admitted to a portion of the ground, railed off and immediately facing the altar. The little band of Founders were given seats on either side of this altar, with its great red cross; behind them, on the Epistle side, were massed the united choirs of the most important London churches, under the leadership of Father Charles Cox.

The 29th of June dawned somewhat cold and stormy, but from an early hour the stands began to receive their human burden. At the appointed time the procession was seen wending its way from the Archbishop's house in Francis Street through the intervening streets. Impressive and not to be lightly forgotten was that long, slowly advancing line of clergy—secular priests, representatives of every religious Order, Canons, Monsignori, Bishops, Archbishops and Cardinals. Cardinal Logue, the Primate of All Ireland, assisted Cardinal Vaughan, and sang the High Mass after the laying of the stone and the performance of the other ceremonies ordained for such an occasion, which included a procession and the blessing of the lines marked for the foundations of the outer walls. The luncheon was signalized at its close by several speeches of note and the despatching of a telegram to the Holy Father, in the name of all present, to announce that the foundation-stone of Westminster Cathedral had been that day "well and truly laid."

The excavations for the foundations were put in hand immediately, the labour and cost of these preliminaries being considerably lessened from the fact that a fine and solid concrete foundation, that of the old Tothill Fields Prison, already extended over a large portion of the site. Towards the latter part of 1896 the foundations in concrete and brick were ready for the superstructure, for which the contract was signed in the November of that year. Work proceeded rapidly, in spite of the difficulty of obtaining a sufficient supply of hand-made bricks and the hampering effect of bricklayers' strikes. The men were astonished at the solid massive character of the brick walls and piers, and objected, in characteristic warmth of language, that they were not accustomed to laying "blooming pavements"! Another delay, annoying to the architect, when the time came for the fixing of the marble monolithic columns, arose from the detention of some of these by the Turks during their hostilities with Greece. These marbles were obtained from the ancient quarries in Thessaly and Eubœa, re-discovered and newly worked just as the architect of the Westminster Cathedral was beginning his search for the finest marbles the earth would deliver up to him. It is considered probable that these magnificent specimens he acquired are the first taken out since the days when the Emperor Justinian worked the quarries to obtain marble for his great Church of Santa Sophia, at Constantinople. Mr. Bentley devoted the utmost care to the choice of his marbles, both as to their "colour" and "figure." His ambition was to attain perfection in every detail, as far as, humanly speaking, it is possible to attain it.

### Brooklyn Cathedral.

When the work of the cathedral was well in hand, and uninterrupted progress possible without his supervision, he received a visit from the Bishop of Brooklyn, who was anxious to build a cathedral for his diocese. He was in possession of a site and a design by an American architect who had died before his work took definite form. The Bishop, when on a visit to England, was much struck by the new cathedral in London, and made the acquaintance of its designer, who subsequently received from his lordship a commission to prepare plans. It was necessary that Bentley should first become familiar with the site, the nature of the soil and the cost and relative merits of building materials in that part of the world. A visit to New York was accordingly arranged for in the spring of 1898. The serious illness of one of his daughters somewhat delayed his departure—he could not bring himself to leave home until she was out of danger. The crisis being past, and convalescence a certainty, he sailed on the "Lucania" on May 22nd; staying, while in America, at the Bishop's house and meeting with a kindly and hospitable reception. After satisfying himself on the various points which demanded investigation and consideration, he made the homeward voyage, reaching London on July 10th.

Besides the cathedral, numerous other works claimed his attention at this period, and it was not possible for him to press forward at once with the actual drawing of designs for the Brooklyn Cathedral. However, he sent out a ground plan, and, as time would permit, proceeded to put on paper the elevations of the glorious Gothic cathedral, which his vision beheld, but which Fate, alas! had decreed he should never realize.

### The New Archbishop's House, Westminster.

The cathedral works proceeded apace, and he began in 1899 to build Archbishop's House at the north-east end of the cathedral, and communicating with it by means of cloisters. This block of buildings comprises the diocesan library, chapter-hall and a fine suite of reception-rooms.

Even before the journey to America Bentley's health had been causing anxiety; the change and rest of a sea-voyage, from which much good had been expected, had no permanent effects. In the November of that year the strain of the multiplicity of his works, combined with family anxieties, broke him down completely in body. A slight stroke of paralysis partially and temporarily affected his speech, while in no way impairing the vigour of his brain. As returning strength would allow, he continued to work in the old unsparing way. For about eighteen months Providence was kind, but overtaxed Nature revolted, and the second warning came in the June of 1900.

He had promised to meet a congress of architects at the cathedral on a certain date to personally conduct them over the works. On the day appointed, in spite of the entreaties of those who realized how little fit he was to leave home, he tried to keep his promise; but when he attempted to begin his address his tongue refused to articulate, and he was forced to beg Monsignor Johnson to fill his place. The illness that supervened was long and very painful to a mind so wrapped up in its work. The specialist consulted insisted on absolute rest for at least six months, as the only chance of recovery. The active brain rose in revolt at the idea of the loss of so much precious time. "I would rather die than not work," he cried, but sheer physical weakness compelled a partial and unwilling obedience, though he kept in touch with his work all the time.

After a short three months' rest in the country he took up his pencil again, struggling bravely against the fatigue that appeared constantly to handicap him. It seems now to those who knew him well that he realized that his life was approaching the end, and, determined not to spare himself, he would give of his best while time yet remained. His health had been unsatisfactory all through the winter of 1901–2, but in the spring he grew a little stronger and more cheerful. He talked of arrangements for crossing to America again in April or May, with the completed drawings for Brooklyn Cathedral, and was looking forward with apparent pleasure to the voyage.

The King's Gold Medal was offered to him by the Royal Institute of British Architects early in the year. His acceptance of this recognition of his genius caused his family and friends much satisfaction.

The internal decoration of the cathedral was started in February, 1902, by the fixing of some of the marble wall-lining in the Chapel of Saints Gregory and Augustine. The architect stood watching the men at work there on the last day of his life.

On the morning of Saturday, March 1st, he went to his office in the usual manner, looking, indeed, better and brighter than he had for many days. He received a visit in the course of the day from an old friend of some forty years' standing, and talked to him with animation about many matters of interest to them both, touching especially upon the cathedral and the completed designs for its high altar, baldachino and marble floor; he showed these latter with evident satisfaction. He was engaged on the drawing for the high altar of Spanish Place Church, a beautiful thing, to be wrought in bronze (inlaid with lapis-lazuli and pearl) and in marble, with a panel of "opus sectile" as a frontal—his pencil and glasses being set down on this design when, late in the afternoon, he closed the office-door for the last time. On the way home he stopped to call on some of his oldest friends, and while at their house the fatal seizure overpowered him without premonition. He became speechless and slowly sank into unconsciousness, unbroken by any gleam of recognition of the members of his family, who were hastily summoned. A priest from Archbishop's House administered Holy Unction and the Last Blessing, after which he was carefully and gently taken home. The night passed in hours of helpless watching, for when the doctors left his bedside no more could be done. The warning of the end came in the early hours of Sunday morning; at six o'clock the soul which had so striven for and loved the beauty of God's earthly tabernacles peacefully and gently winged its way to receive, we may hope, the reward of the good and faithful servant—the vision of the Lamb in the perfection of divine, eternal beauty.

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## Correspondence.

### Wakefield Cathedral.

*To the Editor of* The Builders' Journal.

Oatley.

Sir,—In your issue for July 29th a statement with regard to buildings to measure around Wakefield is slightly misleading. Wakefield Cathedral, as regards the exterior, was almost entirely refaced in the eighteenth century by Wyatt, who put in some atrocious detail, the rest by Sir Gilbert Scott: so there is practically none of the original exterior left. The beautiful front of the chantry on the bridge, a very fine specimen, was recently removed to Kettlethorpe Hall, and a modern copy substituted. This latter, however, was in soft stone, and has already decayed as badly as the one which was removed. I believe that the rest of the building is all original.—Your truly,

MARTIN SHAW BRIGGS.

## A MEDIAEVAL BUILDING MATCH.

It would seem that when Richard II. was King of England two Yorkshire lords engaged in a building competition. At any rate this was the suggestion humorously made by Mr. St. John Hope to the members of the Royal Archæological Institute in the course of their visit to Wensleydale the other day. The Lord of Middleham, Ralph Neville, was the possessor of a huge tower, whilst the Lord of Bolton, Richard Scrope, lived in a much humbler abode on the opposite side of the dale. Each was a proud and ambitious man. Neville encircled his great tower with a range of buildings and curtain walls, and Scrope, not to be outdone, thought he would have a new house. He was not hampered, as was Lord of Middleham, with a huge tower in the middle of his site, and he was therefore able to build his dwelling in quite the latest mode. To be equal with his neighbour over the way he spent money lavishly, and Leland says that Bolton Castle cost in building 1,000 marks a year for eighteen years. Scrope was a man of businesslike ways, and he had a proper written contract drawn up between himself and the builder, and that most interesting document is still in the possession of the present Lord Bolton. It is dated September 14th, 1378. Before this time it would have profited a man little to build a big house unless he very strongly fortified it, but the Lord of Bolton was able to take advantage of quieter times, and his big house marks the first stage in the transition from the inconvenient fortress to the desirable freehold dwelling-house. At the same time Bolton was not a particularly safe distance from those troublesome folk, the Scots, and therefore my Lord of Bolton, in order that he might sleep safely in his bed, took care that every gate was guarded by a portcullis, and that each corner of his huge quadrangular dwelling was provided with a commanding tower. The house was one of those in which the unfortunate Mary Queen of Scots was lodged. In the Civil War it held out for the king for a long time, until starvation forced a capitulation, and two years later Scrope's splendid dwelling was dismantled by order of the Parliament. Now it is a ruin given over to the sightseer and the holiday maker, but so well is it preserved by the present Lord Bolton that one needs only to approach it with a knowledge of the past and a systematic imagination to see it filled with knights and dames and the numerous retinue of a mediæval baron—and that, after all, is the most interesting and the most vital aspect of archæological study. Many of the numerous rooms are perfect, including the small chamber which was to the unhappy Scottish queen a prison. From the roof of the western tower there is a splendid view of Wensleydale.

In its palmy days Middleham may have been a greater place than Bolton, but now it is in a sad plight. It belongs to Lord Masham, and the appeal which Sir Henry Howorth, the president of the Institute, made should not fall on deaf ears. Sir Henry pointed out that a great deal of this most interesting castle is in imminent danger, and requires immediate attention if it is to be saved from absolute decay. The destructive, if picturesque, ivy has found a lodging in the very entrails of the building, and great masses of masonry hang by mere adhesion to the walls. Any winter a frost, a thaw, and a big storm may reduce a great part of the remains of Middleham to a heap of loose stones. The castle descended from the Nevilles to Richard III., who married Anne Neville, and on his death it passed to the Crown. Bulwer Lytton makes it the scene of his novel, "The Last of the Barons."—(From the "Yorkshire Post.")

## BRIDLINGTON PRIORY.

THE Priory of Bridlington was founded in the reign of Henry I. (or early in the twelfth century) by Walter de Gaunt, and flourished down to the year 1538. In the following year the buildings belonging to the monastery were demolished (by the order of Thomas Cromwell, Secretary of State in Henry VIII's reign), including the transepts, central tower and choir of the conventual church, the nave alone—the present parish church—being left standing. The church, generally speaking, is Early English, although it contains good specimens of both the Decorated and Perpendicular styles. It was restored in 1846 by the late Sir Gilbert Scott. The porch is Early English, and contains beautiful arcading inside which continues up to the church doorway (part of it is shown on the section on the next page). Mr. Whipp, whose drawings are here reproduced, says: "The roof is groin vaulting, the ribs being in semicircular arches, but as this roof was completely restored by Sir Gilbert Scott I did not draw it, with the exception of getting quarter-full-size sections of the groin and wall ribs, which were kept by him to the original pattern. The filling between the ribs he made of four courses of white stone and one of dark alternately, which forms a pattern on plan looking up, but unfortunately the stone is very white, also in narrow widths of about 4in., and is rather apt to remind one of white-glazed bricks. The floor of the porch, and the seats at each side, were restored at the same time. The outside is very rich work (with drapery around bases of columns), but the carving is much mutilated and most of the bosses are restored work." Students would do well to recollect these facts when measuring any old building. It is essential to know whether the stonework is that which has actually come down to us from earlier centuries or whether it is the work of a modern restorer.

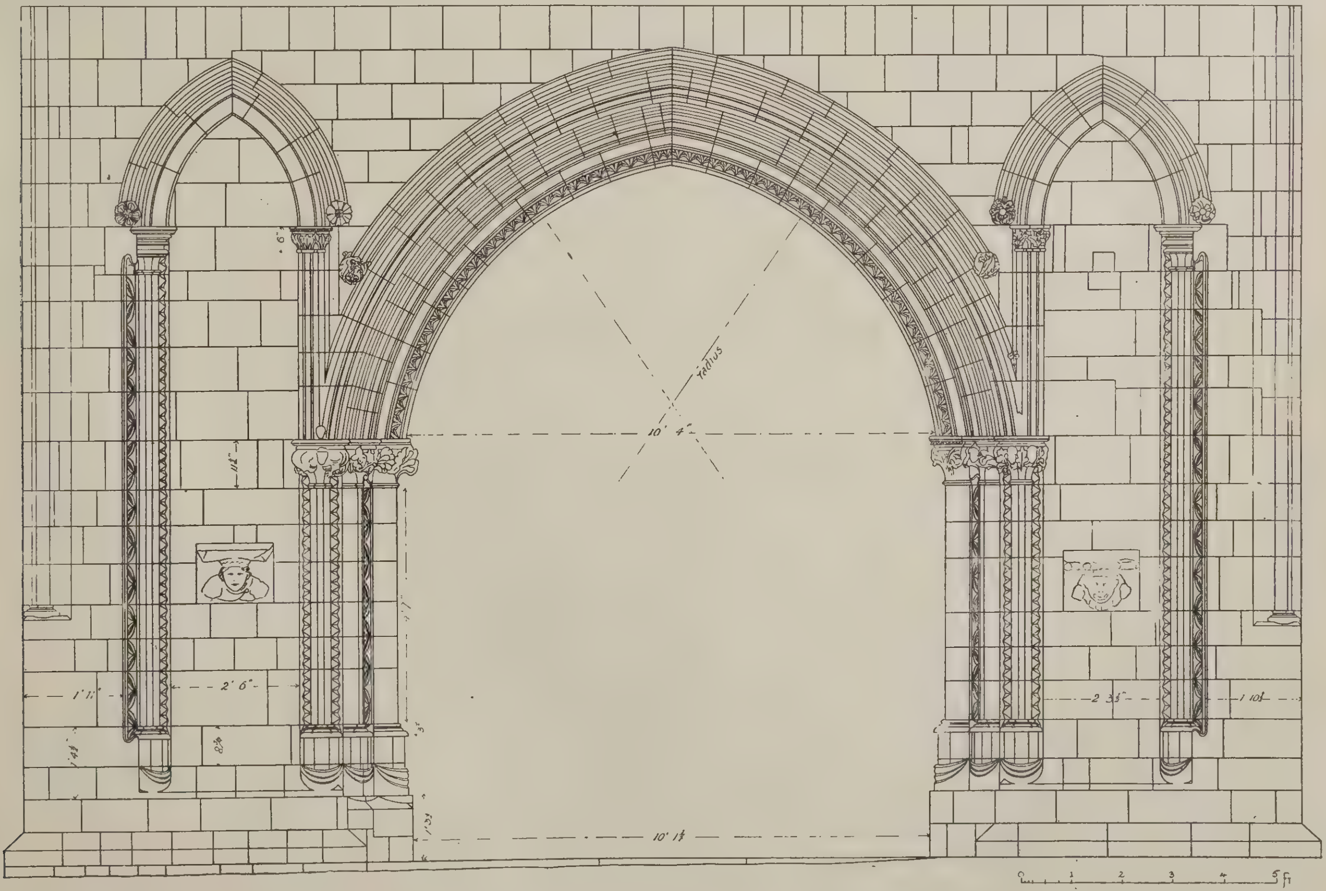
## Enquiries Answered.

*The services of a large staff of experts are at the disposal of readers who require information on architectural, constructional or legal matters. Questions should in all cases be addressed to the Editor. The querist's name and address must always be given, not necessarily for publication.*

### The Acoustics of a Council-Chamber.

READING.—J. M. and S. write: "We should be glad of any advice for improving the acoustics of a court-room, here used as the county council chamber. The members complain that they cannot hear one another speak. You will notice from the plan (not reproduced) that no seat is far distant from another, but owing to the height of the room the voice apparently is lost in the space between the speakers and the ceiling; there is also a slight echo. One of the county councillors is of the opinion that the matter would be much improved if wires were stretched across the room between opposite walls below the ceiling level. We do not consider the scheme likely to be successful even as regards the echo, as we think the echo is caused by the walls rather than the ceilings. Could you suggest any remedy? The cubical area of the court is 46,208ft. The walls are of Bath stone, and part of the court in panelled to about 4ft. high. The area of the four walls, including doors, openings and windows, is 4,864ft. The superficial measurement of doors and openings is 169ft. 8in., of two windows 60ft., and lights in ceiling 108ft. The seats are mainly oak chairs, arranged to seat about 110. The gallery would seat about fifty-five. The ceiling is of plaster and glass. The curtain at the back of the councillors' seats is of thick red baize; its area is 276ft., but half of this is below the top of the seats. The area of the floor (wooden) is 1,444ft., covered with cork linoleum in places."

The faulty acoustics of the hall are to be traced to the fact that the sound is not absorbed quickly enough, and the residual sound from notes or waves of sound obstruct and clash with those following, thus confusing the hearing. The reason of this detrimental amount of reverberation is that the hall is too high and the materials of which it is constructed not sufficiently absorptive. The length of the hall is too short to cause a bad echo, but the residual sound is just as annoying. A certain amount of reverberation is an advantage in a hall for singing or music, as the sound reflected from the surfaces of the room returns in sufficient time to reinforce continued notes and soften or tone down the staccato effect of notes of short duration, sustaining the tone. But for speaking any residual sound is a disadvantage. For a sound whose duration at the source is only $\frac{1}{10}$th of a second, a difference of path of only 100ft. would be sufficient to prevent reinforcement, and the articulated elements in speech change rapidly. The dragging of one sound into the succeeding, often into several succeeding sounds, is destructive of all distinctness in hearing. In a room designed for the use of a few persons, such as a court or council-chamber, somewhat scattered, a low ceiling is desirable acoustically, but in one intended for large audiences a low ceiling would only reflect the sound on to the front part of the audience, where it would be absorbed, and would not therefore reach those at the back. It has been found that the residual sound is a fraction of the volume of the room and the absorbing power of the walls, contained furniture and audience, and the relation is expressed for ordinary purposes by the formula $T = \frac{\cdot 164 V}{a}$, where T = the duration of the residual sound in seconds after session (at a standard initial intensity of 1,000,000 time the intensity of minimum audibility); V = the volume of the room in cubic metres;



THE PRIORY CHURCH, BRIDLINGTON: FRONT ELEVATION OF NORTH PORCH. MEASURED AND DRAWN BY T. W. WHIPP, A.R.I.B.A and *a* = the absorbing power of the room. The absorbing power is determined by multiplying the area of the exposed surfaces in square metres by different coefficients of absorption for various materials. (For these and further particulars see p. 5 of "Specification No. 6.") Substituting in this equation the terms in the present example, we find that the duration is equal to nearly two seconds, which is apparently too great for a hall for speaking purposes. The problem therefore becomes one of either diminishing the volume of the room by lowering the ceiling or adding sufficient absorptive material to lower this duration to normal limits. The latter is obviously the more practical. We suggest the following alterations should be made to the chamber:—All the seats on the floor and gallery should have heavy hair cushions placed on them. The whole of the floor should be covered with a thick felt carpet. The back and side walls should be covered with thick felt or very heavy curtains up to the dado. Remove the curtain behind the seats further back, lengthen down to floor, and take away wood partition in front so as to expose its surface. The underside of the gallery should be covered with felt, and the divisions between the pilasters on the wall should also be covered with some thick kind of asbestos relief decorations Curtains should be placed wherever possible. By these means the duration will be reduced to about half a second, which will be fairly satisfactory though not good.

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### St. Sepulchre's, Holborn.

LONDON, S.W.—ELEVE writes: "How much of St. Sepulchre's Church, Holborn, is old work, and how much restored work? I have measured some parts of the tower."

There is scarcely any mediæval masonry now *visible* at St. Sepulchre's Church. The structure dates from the time of Henry VI. or Edward IV. (see Stow). But Seymour writes in 1734, "the church being almost demolished, except part of the wall and steeple, by the fury of the flames in 1666, it was again re-erected and finished Anno 1670." It is not quite certain whether Wren was responsible for the restoration—perhaps only in part. Mr. Daniell enumerates repairs in 1738 and 1837, when the present ugly roof was constructed. Further restorations took place in 1863, and the pinnacles of the tower were renewed in 1875 (these are 140ft. above pavement). At the same time the tower and porch were "refaced" and fresh tracery introduced. Up to this date the west end of the church had retained something of mediæval appearance. Further works took place in 1878, 1880, and even more recently fresh offsets were given to the buttresses. With this information you will probably be able to form some opinion as to the age of visible masonry, but I will visit the church at the first opportunity and communicate with you if you think it advisable.

F. H. M.

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### R.I.B.A. Intermediate Examination.

TODMORDEN.—W. S. writes: "Are the problems shown in Harrison and Baxendall's 'Advanced Geometry' suitable for the sheets of intersection of solids required for the R.I.B.A. intermediate examination?"

A sheet of intersection of solids is not required, but geometry is one of the subjects for the R.I.B.A. intermediate examination. Particulars of the R.I.B.A. examinations may be had on application to the secretary, R.I.B.A., 9, Conduit Street, Regent Street, W. For this examination Harrison and Baxendall's "Advanced Geometry" is one of the best books you could study; in fact, its perusal would well repay anyone who intends studying architecture or engineering. There is much of it, however, that does not deal with problems of the kind set for this examination. The essential chapters for your purpose are I., II., III., VIII., IX., X., XI., XIII., XV., XVI. (very important) and XVIII. The other chapters may be read if you wish to do so. Chapter XXI. will be found useful, as "Graphic Statics" is another subject of your examination. You will do well to consult old R.I.B.A. examination papers published in the Kalendar of the Institute, and so become familar with the nature of the questions set.

G. A. T. M.

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### Buildings to Measure near Margate.

LONDON, S.W.—H. D. writes: "Kindly name some buildings within twelve or fifteen miles of Margate suitable for sketching purposes."

The little flint church of St. Peter's, about ten minutes by tram, contains some beautiful twelfth-century capitals by William of Sens, and a little good later work besides. Barfreston, about ten miles distant, has one of the richest and best-known small Norman churches in England, covered with excellent detail and elaborate sculpture. Herne Church (three miles from Herne Bay), the church of Bishop Ridley, has a charming Decorated west window and much good Perpendicular work, besides a great number of brasses, mostly later, and a few monuments. Reculver Towers, on the coast, are picturesque ruins only. At Dover, just beyond the radius mentioned, there is the Castle, whose Norman plan can be easily traced with the most perfect Norman gate-house in existence, while within its precincts are the Roman Pharos or lighthouse, and a Romano-British church with an Early English chancel. In the town of Dover there is also the church of St. Mary, Early Norman in style, with a horse-shoe western arch. In this church repose the remains of King Stephen, discovered there during the restoration about twenty years ago. Canterbury is only just beyond the fifteen-mile limit. Above all, its cathedral should be visited. It is one of the most beautiful and most interesting in Europe.

G. A. T. M.

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### Chimney-sweeping Apparatus.

DEVON.—ARCHITECT writes: "Do you know of any special sweeping apparatus for long and winding or much-gathered-over chimneys?"

Write to Mr. H. Hart, 29, Settles Street, Mile End, London, E.

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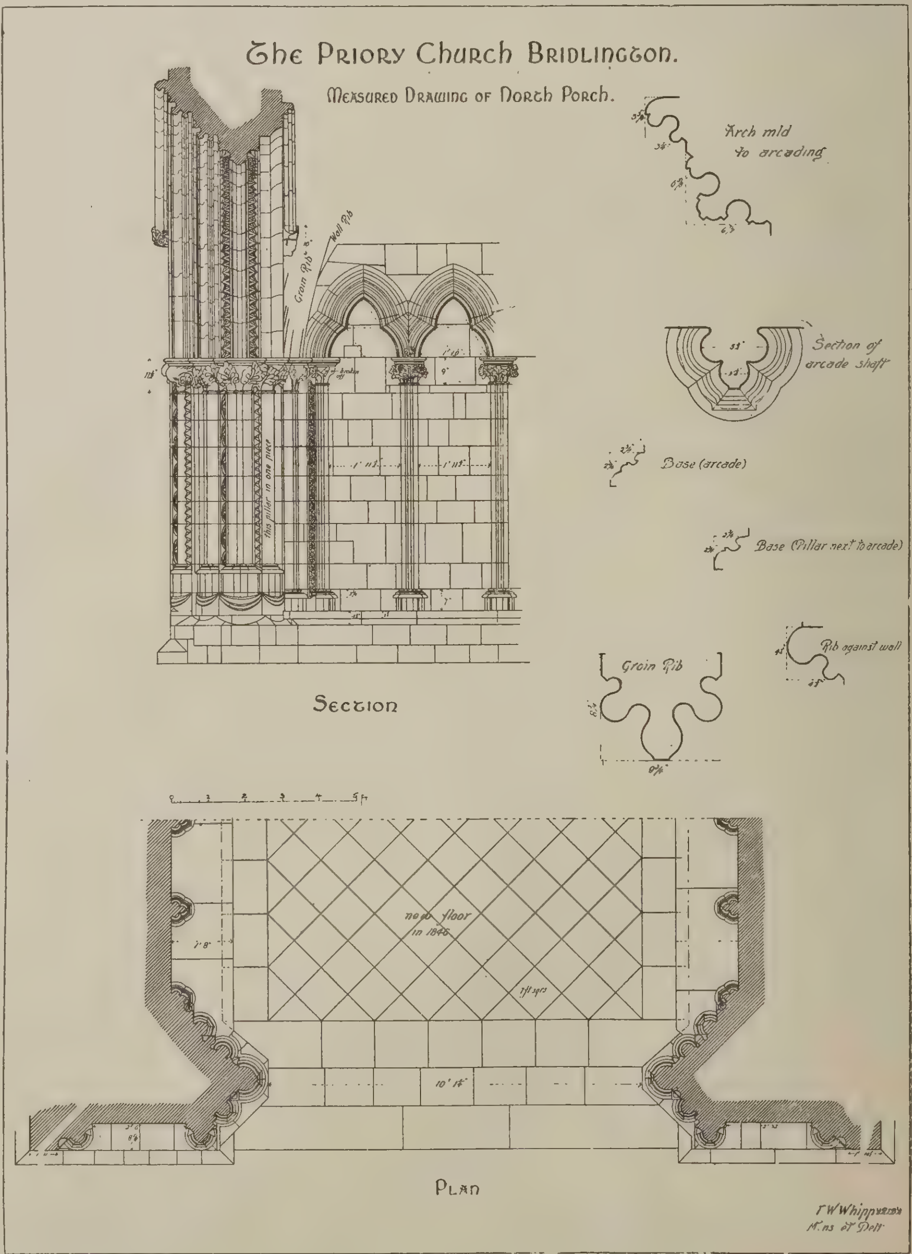
### Admiralty Appointments.

LONDON, S.E.—E. G. H. F. writes: "Kindly give me particulars of qualifications, &c., necessary to obtain an appointment in the Architectural Department of the Admiralty."

Such appointments are obtained in open competitive examination, particulars of which can be obtained from the Secretary, Civil Service Commissioners, 68, Victoria Street, S.W.



# Keystones.

**Somerset Archæological Society.** — The total membership is now 614. Mr. F. J. Fry, of Crichet St. Thomas, is the new president.

**At St. Mary's Church, Cherry Orchard, Worcester,** a new pulpit and font have been erected. Messrs. Yeates & Jones were the architects, and Mr. R. Houghton, of Worcester and Swansea, was the sculptor.

**"The County Gentlemen's Estate Booklet"** for August (16, Cockspur Street, S.W., price 3d.) contains some notes on the design and construction of stables by Mr. G. L. Sutcliffe, A.R.I.B.A.

**Old Venetian Carving.** — An important work on sculpture is Hans von der Gabelentz's "Mittelalterliche Plastik in Venedig" (Hiersemann, Leipzig, 15 marks), a critical catalogue of all the notable mediæval carvings in Venice, with a special examination of its early sculptured ornament.

**Irish International Exhibition, 1906.**— Mr. George C. Ashlin, F.R.I.B.A., R.H.A., and Mr. J. H. Ryan, M.A. (president of the Institute of Civil Engineers of Ireland), are to draw up a report on the probable cost and general character of the buildings for this proposed exhibition.

**Competition Reform Society.**—The committee disapproves of the existing conditions in the competitions for a proposed public library at Bromley, E., and a school at New Brompton, on the ground that there is no independent assessor in either case. Members are therefore requested to abstain from competing unless the conditions are satisfactorily revised.

**Public Buildings Competition, Durban, Natal.**—Some time ago architects were invited to submit drawings in a preliminary competition for a town hall and public offices at Durban. Four architects practising in South Africa and two in England were selected to submit further drawings in the final competition. These drawings are now about to come under consideration.

**Electricity in New Zealand.** — The New Zealand Government intends to make use of powerful waterfall called the Huka Falls, in North Island, for the purpose of obtaining electricity. A Swiss engineer named Alloa, of Berne, has been engaged by the Colonial Government to construct an electric station on the falls. It is estimated that the electric force which will be obtained will be sufficient to light the principal centres in the North Island and to supply power for the tramway systems.

**Junior Institution of Engineers.**—The summer meeting of this institution (the president of which is Col. E. Raban, C.B., Director of Works of the Navy) is to be held at Sheffield. The proceedings will be opened on August 17th by the Lord Mayor, the Right Hon. J. Wycliffe Wilson, J.P., who will receive the members at the Town Hall. Messrs. Davy Brothers' works will then be visited, and afterwards those of Messrs. Hadfield's Steel Foundry Co. at Tinsley. On Tuesday there will be an excursion to Haddon Hall and Chatsworth. Messrs. Charles Gammel & Co.'s works will be visited on Wednesday morning, and in the afternoon Messrs. J. Dixon & Sons. Thursday will be occupied by an excursion to Castleton, and on Friday the Toledo Steel Works of Messrs. J. H. Andrew & Co. and the Suffolk Works of Messrs. T. Turner & Sons are to be seen. The summer dinner takes place in the evening at the Royal Victoria Hotel, Sheffield. Mr. Ernest King, of Messrs. Mellowes & Co., Corporation Street, Sheffield, is acting as hon. local secretary. The programme includes various hospitable invitations arranged for the entertainment of the members during the week.

**Mr. Charles Hawksley** will be the president of the engineering section at the British Association meeting at Southport next month.

**Acton County School Competition.** —Messrs. Pratt, Adams, Pywell, Clay, Tiltman, Osborne Smith & Giles, Gough & Trollope have been chosen to submit designs in this competition (by October 31st).

**The Extension of Glasgow University Buildings** is likely to cost about £90,000. Estimates amounting to £67,000 have been accepted, but these are exclusive of the internal fittings and furnishings of the new buildings.

**New East-End Temple.** –The Stepney Wesleyan Temple is to be replaced by a new building. A central hall is to be built with seating accommodation for 2,169 persons, schoolrooms are to be erected and residences provided for ministers. The total cost is estimated at £50,000.

**A French Memorial.**—The sculptor Boverie, in conjunction with M. Sandier, director of the Sèvres Manufactory, has completed a monument which is to be erected at Chaville to the memory of Colonel Gillon, who died while commanding the Expeditionary Forces in Madagascar. The monument is original in that the bust, stela and decorative devices are of Sèvres stoneware.

**"Everyday Electricity"** is the title of a new non-technical journal dealing with the application of electricity to domestic and industrial purposes. It is to be published monthly, price 2d. In the first number there is a concise article by Mr. W. Perren Maycock, M.I.E.E., on wiring specifications, which should be of interest to architects and builders.

**The new Bluecoat Hospital at Liverpool.** —The foundation-stone of this building was laid by Lord Derby on Wednesday last. It will be built of red brick, with facings of white stone, and accommodation will be provided for 250 boys and 150 girls. The site covers nearly 7½ acres. A prominent feature of the buildings will be a central tower 125ft. in height, supporting a public clock and bells. The hospital is to cost £65,000. Messrs. Briggs, Wolstenholme, Hobbs & Thornley, of Liverpool, are the architects.

**The Congregational Church, Corsham, Wilts,** has recently been considerably added to. The new buildings consist of a schoolroom 46ft. by 20ft., with an open-timber roof, new classrooms and vestry, together with alterations to the interior of the church. Most of the work has been done by voluntary labour, and valuable presents of stone have been made by the Bath Stone Firms and other local stone merchants. The plans were prepared and the work superintended by Mr. W. H. Bromley, surveyor, of Corsham.

**The Surveyors' Institution.**—The thirty-fifth annual report gives the membership as 3,443, an increase of 131 on the year. Ten years ago it was 2,269, and twenty years ago only 887. The finances continue in a satisfactory condition, the revenue of the year having admitted the investment of £2,000; the assets now stand at over £26,000. The number of candidates who sat for the professional examinations was 424; the examinations were held at London, Manchester, Glasgow and Dublin. Considerable additions have been made to the library of the institution, and a loan library has been established for the benefit of country members who may wish to borrow professional text-books and works of reference. Three years having elapsed since the completion of the new house of the institution in Great George Street, Westminster, the more permanent decoration of the principal rooms has now been carried out.

**Competition for Water-Supply Scheme for Flamborough.** — The scheme of Messrs. Elliott & Brown, of Nottingham, has been adopted out of fourteen submitted.

**M. Girault,** the French architect, has been entrusted by the King of the Belgians with the task of constructing the new museum of Tervueren.

**The New Government Offices.**—The Public Buildings Bill authorizes the issue out of the Consolidated Fund of £1,790,000 towards the cost of the Government offices now being erected at Westminster.

**The Piccadilly Widening.** — The Westminster City Council have decided to contribute £40,000 towards the proposed widening of Piccadilly from Sackville Street to the Circus.

**A new Wesleyan Chapel at Oxford,** on the Cowley Road, is being built from designs by Mr. Stephen Salter, F.R.I.B.A., of Oxford, at a cost of about £8,000. Messrs. T. H. Kingerlee & Sons are the contractors.

**Alterations and Additions to the Herefordshire Working Boys' Home** have just been completed. Messrs. Brookes, Godsell & Groome, of Hereford, were the architects, and Mr. W. Bowers, of Hereford, was the builder.

**A new Fire Station at Deptford** is being erected by the London County Council. The site is in Evelyn Street. Work was commenced in May, and it is hoped the building will be ready for occupation by next April. It is estimated to cost £10,350.

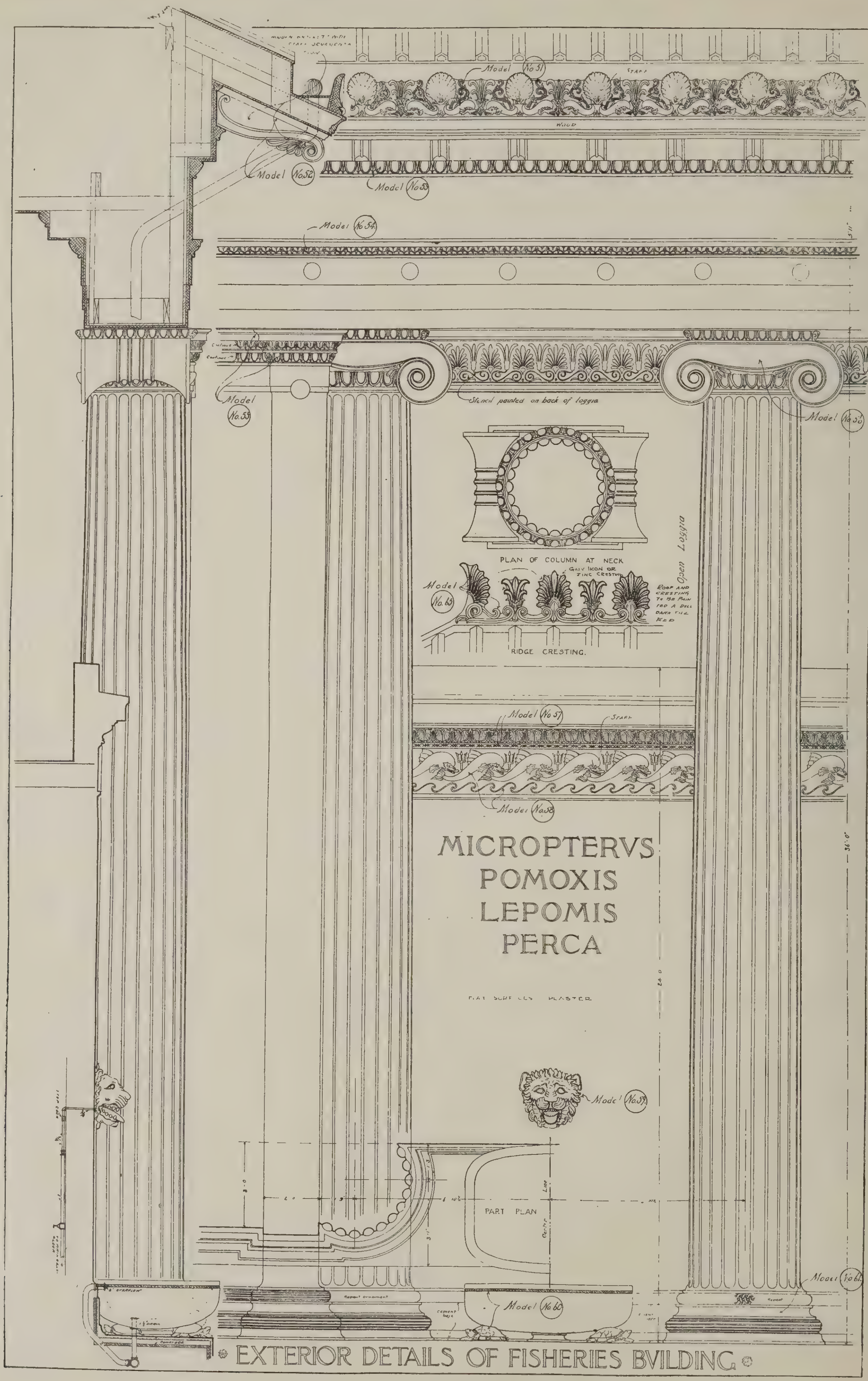
**Mr. Carnegie's Gift to Dunfermline.**— Among the fifteen representative citizens of Dunfermline nominated by Mr. Carnegie as the trustees of his gift of Pittencrieff Park and Glen (and an annual revenue of £25,000) to his native town is Mr. Andrew Scrobie, architect (provost).

**Maidenhead Free Library Competition.**— First premium, Messrs. Blangy & Van Baars, London, W.C.; second, Messrs. McEwen & Kale, Birmingham; third, Messrs. North & Robin, London, W.C. Eighty-six designs were submitted. Mr. Edward W. Mountford, F.R.I.B.A., was the assessor.

**Extension of the British Museum.**—It is proposed to extend the British Museum at a total cost of £200,000. Sketch plans have been prepared by the principal architect of the Office of Works for the erection of a new block in Montague Place. The designs have been prepared to accord with the architecture and arrangements of the existing buildings.

**An Inebriates' Home for Yorkshire.**—The foundation-stone was recently laid of an inebriates' reformatory for Yorkshire. The site is at Cattal, about half-way between York and Knaresborough. The building has been designed by Mr. J. Vickers Edwards, of the West Riding County Council, and will provide accommodation for an elaborate system of classification of patients, as well as for a full complement of attendants.

**A new Bridge at Yalding, Kent,** has been erected in place of the old wooden bridge in Hampstead Lane. The old bridge, which spanned the river at right angles, had a waterway of 16ft. 6in. and a clear headway for barges of 6ft. 3in. It was constructed of curved oak beams covered with oak slabs, and had a roadway of 12ft. 6in. between open wooden fences, the gradient of the approach on the north-west side being as great as 1 in 10. The new bridge has a waterway of 21ft. and a headway of 9ft. 6in.; the gradient is 1 in 20. The roadway is 16ft. 6in. wide and the path 4ft. The length is 445ft. The contractors were Messrs. G. E. Wallis & Co., and Messrs. F. W. Ruck & Wilkins the engineers. The cost was £4,400. The new bridge is placed upon foundations of cement-concrete resting upon solid clay and protected by sheet piling; it is faced with Kentish rag stone, the approaches on each side being flanked with iron railings.



THE LOUISIANA PURCHASE EXPOSITION, ST. LOUIS, U.S.A., 1904. JAMES KNOX TAYLOR, SUPERVISING ARCHITECT.

# Builders' Notes.

**Kent Brickfields and the Rains.**—The brickfields in the Sittingbourne district, the heart of the Kentish brickmaking industry, have suffered much damage by the heavy rains. The water has penetrated the clamp kilns, which means additional loss to the makers. The season is too far gone to enable these losses to be recouped, and it is feared that the reduced output will react on the building trade.

**Leeds Water Supply Arbitration.**—Lieut.-Col. W. H. Wellsted, the umpire upon the claim recently heard at Westminster of Lord Masham against the Leeds Corporation, has just issued his award. The arbitration had reference to the compulsory acquisition of 395 acres of freehold land belonging to Lord Masham for the purposes of the Leeds new waterworks. The claim was for £196,000. The valuations of the expert witnesses called by the Corporation amounted to £27,000. The umpire has fixed the amount of purchase at £46,489.

**Mr. Andrew Calderwood,** builder, of Kilmarnock, died on August 6th at the age of fifty-five years. Besides carrying on an extensive business, Mr. Calderwood took a prominent part in public affairs. He was a man of strong force of character and shrewd business capacity, and his practical knowledge proved of much service to the Corporation in dealing with many important questions. Among the more important buildings he erected in the town were the Burns Monument in the Kay Park, the Opera House (now converted into a church), the Dick Institute and the new academy.

**Manchester Houses Disaster: Verdict.**—The jury returned a verdict of criminal neglect against W. H. Warner, the agent of three houses in Henry Street, Ancoats, Manchester, which recently collapsed, suffocating two children, and a verdict of culpable negligence against the Corporation building inspector. The cause of the collapse was the giving way of a chimney stack between two of the houses. At last week's meeting of the Manchester City Council, Mr. Wilson, chairman of the Improvement Committee, denied that there was any culpability on the part of the inspector. That officer never entered a house or any other building unless invited. It was no part of his duty to do so. There was only one official inspector, it was true, but the police had instructions to report premises which they considered were in a dangerous condition. The whole force were practically inspectors. Where property was unsafe it was for the owners, who drew the rents, to put it in proper condition.

**Margate's new Water-Supply.**—The new water-supply of Margate was inaugurated on Thursday last by the mayor of the borough. It is claimed that the brackish taste formerly perceptible has now disappeared. The new scheme is the work of Mr. Albert Latham, until recently borough surveyor and engineer, and it provides for a supply from the Wingham district. It comes from the chalk hills, at a spot about midway between Canterbury and Dover, and fourteen miles from Margate. In addition to the latter town, the supply comprises about twenty villages in the neighbourhood of the works, which, when fully completed, will cost about £120,000. Up to the present about 1,200 yds. of adits have been driven, and nearly 3,000,000 gals. per day are obtained from them. The Corporation have entered into arrangements which enable them to drive no less than three miles of adits, the amount required for the supply of Margate at the height of the season being 1,250,000 gals. a day.

**"The Master-Builders' Associations Journal"** has removed to 84, Leadenhall Street, London, E.C. The Liverpool offices at 19, South John Street will be continued as before.

**The Oakwell Infectious Diseases Hospital, Birstall, Yorks,** is being warmed and ventilated by Shorland's patent Manchester stoves, supplied by Messrs. E. H. Shorland & Brother, of Manchester.

**Building Trade Disputes in America.**—The Builders' Exchange League at Pittsburg has ordered a lock-out affecting 25,000 men. The league refuses to confer with the Building Trades' Council until the hoisting engineers, now on strike, resume work at the Home Building, where the trouble started. Reports from New York state that building in the city is again stopped by a strike. How long this will continue is a disputed point between employers and employed. By the former it is stated that this is the last struggle. On the other hand the labour men assert that the fight is just beginning, and that New York will see no building for another six months if the employers do not recede from their positions.

**Defrauding a Firm of Timber Merchants.**—George E. Merredew, builder, formerly in business at Stevenage, Herts, attended before Alderman Strong at the Mansion House Police Court last week to answer a summons under the Debtors Act charging him with unlawfully obtaining credit for £156 15s. without disclosing the fact that he was an undischarged bankrupt. Mr. Arthur Hutton, barrister, who prosecuted, stated that in January Merredew, through a traveller for the firm, gave orders for timber to Messrs. Burton & Co., of 13, Sherborne Lane, City, stating that it was required for a firm engaged in building operations at Bankside. The orders were executed, but Messrs. Burton & Co. were unable to obtain payment. Judgment was given against Merredew for the amount owing, and then it transpired that he was an undischarged bankrupt, a petition having been filed against him at Luton in October, 1899. Merredew was committed for trial at the Central Criminal Court, bail being allowed--two sureties in £50 each.

**The London Building Act.**—At last week's meeting of the Hampstead Borough Council it was decided to forward to the London County Council the following suggestions in regard to the proposed amendment of the Building Act, 1894:—That the whole of part 7 of the Act, which deals with temporary structures, should be transferred to the borough councils, in lieu of the small portion only of that part of the Act which is now under the control of the councils; that the whole of the third schedule of the Act, which deals with the fees payable to district surveyors, should be reconsidered, particularly those fees payable in respect of additions or alterations or other works, or, preferably, that the district surveyor should be paid by salary calculated upon the basis of fees; additional powers of control with respect to the laying-out of new streets; spaces behind houses should be considerably larger than 150ft.; that the local authorities should have power to preserve the beauties and amenities of a neighbourhood, and for that purpose power should be given to the borough councils to make by-laws; that greater powers should be acquired for the creation of needful open spaces in the laying-out of building schemes; that plans should be submitted to the borough councils showing every case of the proposed destruction of trees or other objects of beauty or interest, and the elevations of buildings facing the street; and that sufficient notice should be given to the borough council before commencing the work; and, generally, that the duties of the district surveyors should be vested in the borough councils.

# Current Market Prices.

## FORAGE.

| | | £ | s. | d. | £ | s. | d. |
|---|---|---|---|---|---|---|---|
| Beans .. .. .. | per qr. | 1 | 9 | 6 | 1 | 11 | 9 |
| Clover, best .. .. | per load | 4 | 7 | 6 | 4 | 15 | 0 |
| Hay, best .. .. .. | do. | 3 | 15 | 0 | 4 | 10 | 0 |
| Sanfoin mixture .. | do. | 3 | 15 | 0 | 4 | 5 | 0 |
| Straw .. .. .. | do. | 1 | 10 | 0 | 2 | 2 | 0 |

## OILS AND PAINTS.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Castor Oil, French .. | pet cwt. | 1 | 1 | 10 | 1 | 2 | 2 |
| Colza Oil, English .. | do. | 1 | 4 | 0 | — | | |
| Copperas .. .. | per ton | 2 | 2 | 6 | — | | |
| Lard Oil .. .. .. | per cwt. | 2 | 15 | 0 | 2 | 17 | 0 |
| Lead white, ground, carbonate .. .. | do. | 1 | 4 | 10 | — | | |
| Do red .. .. .. | do | 1 | 0 | 4½ | | | |
| Linseed Oil, barrels .. | do. | 1 | 0 | 4½ | — | | |
| Petroleum, American .. | per gal. | 0 | 0 | 5⅝ | 0 | 0 | 6 |
| Do. Russian .. | do. | 0 | 0 | 4½ | 0 | 0 | 4⅝ |
| Pitch .. .. .. | per barrel | 0 | 8 | 0 | — | | |
| Shellac, orange .. .. | per cwt. | 6 | 19 | 0 | — | | |
| Soda, crystals .. .. | per ton | 3 | 2 | 6 | 3 | 5 | 0 |
| Tallow, Town .. .. | per cwt. | 1 | 8 | 3 | — | | |
| Tar, Stockholm .. .. | per barrel | 1 | 0 | 6 | — | | |
| Turpentine .. .. | per cwt. | 1 | 19 | 3 | — | | |

## METALS.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Copper, sheet, strong .. | per ton | 71 | 0 | 0 | — | | |
| Iron. Staffs., bar .. .. | do. | 6 | 15 | 0 | — | | |
| Do Galvanised Corrugated sheet .. | do. | 11 | 0 | 0 | 11 | 5 | 0 |
| Lead, pig, Soft Foreign .. | do. | 11 | 7 | 6 | — | | |
| Do. do. English common brands .. .. | do. | 11 | 12 | 6 | 15 | 0 | 0 |
| Do. sheet English 3lb. per sq. ft and upwards .. | do. | 14 | 0 | 0 | — | | |
| Do. pipe .. .. . | do. | 15 | 0 | 0 | — | | |
| Nails, cut clasp, 3in to 6in. | do. | 9 | 5 | 0 | — | | |
| Do. floor brads .. | do. | 9 | 0 | 0 | — | | |
| Steel, Staffs.. Girders and Angles .. .. | do. | 5 | 10 | 0 | 6 | 7 | 6 |
| Do. do. Mild bars .. | do. | 6 | 7 | 6 | 7 | 2 | 6 |
| Tin, Foreign .. .. | do. | 125 | 15 | 0 | 126 | 5 | 0 |
| Do. English ingots .. | do. | 126 | 10 | 0 | 127 | 0 | 0 |
| Zinc, sheets, Silesian . | do. | 26 | 0 | 0 | — | | |
| Do. do. Vielle Montaigne | do. | 26 | 5 | 0 | — | | |
| Do. Spelter .. | do. | 20 | 7 | 6 | — | | |

## TIMBER.

Soft Woods.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Fir, Dantzic and Memel | per load | 1 | 13 | 0 | 3 | 0 | 0 |
| Pine, Quebec, Yellow .. | do. | 5 | 5 | 0 | 6 | 5 | 0 |
| Do. Pitch .. .. | do. | 2 | 12 | 0 | 3 | 3 | 0 |
| Laths log, Dantzic .. | per fath. | 4 | 10 | 0 | 5 | 10 | 0 |
| Do. Petersburg .. | do. | 7 | 5 | 0 | — | | |
| Deals, Kovda, 3rd Yell. 3×9 | per load | 13 | 15 | 0 | — | | |
| Do. Sundsvall, Yellow, 5th, 3×9 | do. | 4 | 10 | 0 | — | | |
| Do. Miramichi, Spruce, 1st, 3×7 | do. | 7 | 15 | 0 | — | | |
| Do. do. do. 2nd, 3×5 | do. | 7 | 15 | 0 | — | | |
| Do. do. do. 3rd, 3×7 | do. | 7 | 15 | 0 | — | | |
| Do. Dalhousie, Unsorted Spruce, 3×7 | do. | 7 | 15 | 0 | — | | |
| Do. Umba, Dry Yellow, 2nd, 3×11 | do. | 15 | 15 | 0 | — | | |
| Do. Ljusne, Yellow, 4th, 2½×7 | do. | 10 | 10 | 0 | — | | |
| Do. Onega, White, 3rd, 3×11 | do. | 9 | 5 | 0 | — | | |
| Do. do. do. do. 3×9 | do. | 9 | 5 | 0 | — | | |
| Do. Narva, White. 4th, 3×11 | do. | 6 | 17 | 6 | — | | |
| Do Bonaventure River, Unsorted Spruce 3×11 | do. | 8 | 15 | 0 | — | | |
| Do. do. do. 3×7 | do. | 7 | 10 | 0 | — | | |
| Do. Archangel, Yellow, 4th, 3×9 | do. | 10 | 10 | 0 | — | | |
| Do. Gefle and Sardarne, Yellow, 5th 3×9 | do. | 11 | 5 | 0 | — | | |
| Do. Munksund, Yellow, 1st, 2½×7 | do. | 10 | 15 | 0 | — | | |
| Do. do. do. 2nd. 2½×7 | do. | 10 | 15 | 0 | — | | |
| Do. do. do. 1st, 2½×7 | do. | 11 | 0 | 0 | — | | |
| Do. do. do. 2nd, 2½×7 | do. | 11 | 0 | 0 | — | | |
| Do. Galatz, White, 1st, 3×9 | do. | 8 | 5 | 0 | — | | |
| Do. Norrköping, Unsorted Yellow, 3×8 | do. | 9 | 0 | 0 | — | | |
| Do. Räfsö, Yellow, 4th, 3×11 | do. | 8 | 10 | 0 | — | | |
| Do. do. White, 4th, 2½×7 | do. | 9 | 0 | 0 | — | | |
| Do. Kirt, Dry Yellow, 2nd, 3×9 | do. | 16 | 15 | 0 | — | | |
| Do. Galatz, White, 1st, 3×11 | do. | 8 | 15 | 0 | — | | |
| Do. Burnt Bab Pine, Yell. 2nd, 3×11 | do. | 15 | 0 | 0 | — | | |
| Do. Quebec, Spruce, 2nd, 3×9 | do. | 10 | 15 | 0 | — | | |
| Do. do. do. 3rd, 3×9 | do. | 10 | 10 | 0 | — | | |
| Do. do. do. 5th, 3×9 | do. | 8 | 0 | 0 | — | | |
| Do. do. do. Course, 3rd, 2½×11 | do. | 7 | 15 | 0 | — | | |
| Do. Montreal, Yellow, 4th, 3×11 | do. | 10 | 0 | 0 | — | | |
| Do. Quebec, Yellow Pine, 1st, 3×11 | do. | 28 | 10 | 0 | — | | |
| Battens, all kinds .. | do. | 6 | 5 | 0 | 6 | 10 | 0 |
| Flooring Boards 1in. prepared, 1st .. .. | per square | 0 | 10 | 6 | 0 | 12 | 3 |
| Do. 2nd .. .. | do. | 0 | 8 | 9 | 0 | 11 | 3 |
| Do. 3rd &c. .. .. | do. | 0 | 9 | 3 | 0 | 10 | 9 |

Hard Woods.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Ash, Quebec .. .. | per load | 3 | 12 | 6 | — | | |
| Birch, Quebec .. .. | do. | 3 | 12 | 6 | 3 | 17 | 6 |
| Box, Turkey .. .. | per ton | 15 | 0 | 0 | 20 | 0 | 0 |
| Cedar, Cuba .. .. | per ft. sup. | 0 | 0 | 5¼ | — | | |

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# Tenders.

*Information from accredited sources should be sent to "The Editor" at latest by noon on Monday if intended for publication in the following Wednesday's issue. Results of Tenders cannot be accepted unless they contain the name of the Architect or Surveyor for the work.*

*Addressed postcards on which lists of tenders may be stated will be sent post free on application to the Manager,* BUILDERS' JOURNAL, *9, East Harding Street, E.C.*

**Bath.**—For the supply and erection of a main switchboard at their new generating station, Dorchester Street, Bath, for the Corporation:—

| | | | |
|---|---|---|---|
| E. F. Moy, Ltd., London, N.W. | £1,985 | 0 | 0 |
| Ferranti, Ltd., Hollinwood, Lancs | 1,750 | 0 | 0 |
| Kelvin & White, Glasgow | 1,686 | 17 | 6 |
| Witting, Eborall & Co., London | 1,670 | 0 | 0 |
| General Electric Co., E.C. | 1,650 | 0 | 0 |
| Siemens Brothers & Co., Westminster | 1,632 | 0 | 0 |
| Electric Co., Ltd., London | 1.580 | 0 | 0 |
| Cowens, Salford, Manchester | 1,574 | 0 | 0 |
| Crompton & Co., E.C. | 1,560 | 0 | 0 |
| J. G. Statter & Co.,* Birmingham | 1,544 | 0 | 0 |
| Electric Construction Co., London, E.C. | 1,543 | 0 | 0 |
| Johnson & Phillips, Old Charlton, Kent | 1,540 | 0 | 0 |
| Verity's, Ltd., London | 1,434 | 0 | 0 |

* Accepted.

**Banbridge.**—For the erection of a pumping station for the Mid-Kent Water Co. Mr. Ernest J. Hammond, C.E., M.S.A., architect, 21, Balmoral Road, Gillingham:—

| | | | |
|---|---|---|---|
| J. Welford, Snodland | £767 | 10 | 0 |
| Bardon & Head, Maidstone | 686 | 0 | 0 |
| J. A. Davison, West Malling* | 511 | 8 | 3 |

* Accepted.

**Bristol.**—For rebuilding the Crown Inn, Union Road, St. Philip's, Bristol. Mr. J. A. Wright, architect, 6, Unity Street, College Green, Bristol. Mr. Maynard Froud, quantity surveyor, Bristol:

| | | | |
|---|---|---|---|
| T. R. Lewis | £1,489 | W. & J. Bennett | £1,400 |
| J. Perkins & Son | 1,470 | G. Humphris | 1,289 |
| J. Chapman | 1,449 | A. J. Bevan* | 1,270 |

* Accepted.

**Bristol.**—For the erection of Luckwell Hotel, Bedminster, Bristol. Mr. John A. Wright, architect, 6, Unity Street, College Green, Bristol. Mr. A. Barratt, quantity surveyor, Bristol:—

| | | | |
|---|---|---|---|
| J. Perkins & Sons | £2,500 | A. J. Beaven | £2,290 |
| R. T. Ridd | 2,422 | W. & J. Bennett | 2,190 |
| G. Humphris | 2,367 | H. J. Rossiter* | 2.175 |
| T. Chown | 2,295 | | |

* Accepted.

**Ealing.**—For the making-up of Castlebar Park Road (from Castlebar Hill to Victoria Road), for the Town Council. Mr. Charles Jones, M.I.C.E., borough engineer, Town Hall, Ealing:—

| | | | |
|---|---|---|---|
| A. Wilson, Hanwell | £1,917 | 4 | 11 |
| Neave & Son, Kensal Rise | 1,885 | 0 | 0 |
| J. Macklin, Hanwell | 1,891 | 12 | 3 |
| H. Morecroft,* Mead Lodge, Acton | 1,875 | 0 | 0 |

* Accepted.

**Gateshead.**—For the rebuilding of the Causey House, Sheriff Hill, Gateshead, for Messrs. R. Emmerson & Sons, Sandyford Road, Newcastle. Mr. L. H. Armour, architect, 16, West Street, Gateshead:—

| | | | |
|---|---|---|---|
| R. Veitch & Sons, Newcastle | £1,561 | 19 | 5 |
| W. C. Tyrie | 1,557 | 15 | 3 |
| T. & J. White, Newcastle | 1,551 | 0 | 0 |
| J. Hymers & Co. | 1,550 | 0 | 0 |
| D. D. Hall | 1,498 | 7 | 0 |
| J. Craven, Newcastle | 1,457 | 13 | 9 |
| Raven & Hitcham | 1,452 | 13 | 2 |
| J. Ross & Son | 1,434 | 12 | 2 |
| J. Milne | 1,429 | 9 | 6 |
| H. & B. Arkless | 1,417 | 0 | 0 |
| G. Bain,* 4, Brompton Place, Dunstone | 1,367 | 11 | 0 |

* Accepted. [Rest of Gateshead.]

**Hounslow.**—For the erection of a boiler-house, engine-room, battery-room and offices at the Pear Tree Estate, Hounslow, for the Heston and Isleworth Urban District Council: –

| | |
|---|---|
| Hughes & Stirling, Strand | £3,420 |
| E. Wall, Tooting | 3,360 |
| Wisdom Brothers,* South Street, Isleworth | 3,275 |

* Accepted.

**London, E.C.**—For new staircases and alterations to 96, Fenchurch Street, E.C. Mr. Arthur F. Briggs, architect, 9, Queen Victoria Street, E.C.:—

| | |
|---|---|
| Patman & Fotheringham | £1,400 |
| Turnbull & Son | 1,350 |
| Mansfield & Son | 1,315 |
| Greenwood & Co. | 1,141 |
| Ashby & Horner* | 1,047 |

* Accepted.

**London, S.E.**—For the erection of new premises at Coldharbour Lane, Camberwell, S.E., for Messrs. S. C. & P. Harding. Mr. C. J. Ford, surveyor, 4, Mitre Court, Fleet Street, E.C.:—

| | | |
|---|---|---|
| Foster & Dixey | £6,987 | 0 |
| Howard & Co. | 6,487 | 0 |
| Garrett | 6.300 | 0 |
| Colls & Son | 6 190 | 9 |
| Hollingsworth | 5 960 | 0 |
| Courtenay & Fairbairn | 5,715 | 0 |

**London, S.W.**—For the erection of a new junior school for the Royal Masonic Institution for Girls at Clapham Junction. Mr. Henry A. Hunt, hon. architect and surveyor, 45, Parliament Street, Westminster, S.W.:—

| | | | |
|---|---|---|---|
| Turtle & Appleton | £15,643 | Patman & Fotheringham | £14,793 |
| Longley & Co. | 15,489 | Godson & Son | 14,767 |
| Lawrence & Co. | 15.283 | Allen & Sons, Ltd. | 14,750 |
| Smith & Sons, Ltd. | 15,203 | Higgs & Hill* | 14,664 |
| Holloway Brothers | 15,000 | | |
| B. E. Nightingale | 14,909 | | |

* Accepted.

**Millwall.**—Accepted for certain pile-driving and underpinning work at the Cyclops Ironworks, for Messrs. Edward Le Bas & Co. Mr. Charles E. Gritton, A.M.I.C.E., surveyor, The Briars, Selhurst:—

Messrs. F. & T. Thorne, contractors .. .. £205

**Nottingham.**—For the erection of house and stables, Mapperley Plains. Messrs. A. R. Calvert & William R. Gleave, architects, Nottingham:—

| | | | |
|---|---|---|---|
| Cooper & Son | £1,590 | J. Mussom | £1,466 |
| F. Messom | 1,560 | Fish & Son | 1,466 |
| Maule & Co. | 1,510 | G. A. Pillatt | 1,463 |
| W. Appleby | 1,467 | T. Barlow* | 1,424 |

* Accepted. [All of Nottingham.]

**Parkstone.**—For new roads and sewers, Parkstone Avenue, Penn Hill Estate, for Mr. C. Belbin. Mr. A. Smith, surveyor, Parkstone:—

| | |
|---|---|
| M. Loader, Bournemouth | £1,375 |
| Grounds & Newton, Bournemouth | 1,372 |
| G. T. Budden, Newtown* | 1,294 |

* Accepted.

**Pontardawe.**—For extensions to and renovating Tabernacle Chapel. Mr. Charles S. Thomas, architect, 63, Wind Street, Swansea:—

| | |
|---|---|
| T. Richards, Swansea | £1,450 |
| Bennett Brothers, Swansea | 1,420 |
| D. Jenkins, Swansea | 1,370 |
| Jones, Price, Rees & Davies, Swansea | 1,298 |
| Walters & Johns,* Morriston, near Swansea | 1,230 |

* Accepted.

**Seabrook (Kent).**—For the erection of a petty sessional hall, reconstruction of the heating apparatus, and internal painting at Seabrook police station. Mr. Frederick W. Ruck, county surveyor, 86, Week Street, Maidstone:—

| | | | |
|---|---|---|---|
| Trethowan & Brett, Hythe | £1,750 | 0 | 0 |
| F. W. & J. Clark, Folkestone | 1,595 | 10 | 0 |
| Nightingale, London | 1,360 | 0 | 0 |
| J. Gosby, Folkestone | 1,347 | 12 | 1 |
| Goodwin & Jeffery, Maidstone | 1,332 | 0 | 0 |
| Castle & Son, Folkestone | 1,300 | 14 | 3 |
| G. Pearce & Sons, Maidstone | 1,240 | 0 | 0 |
| A. Dyke, Westgate-on-Sea | 1,238 | 15 | 0 |
| R. Avard, Maidstone | 1,238 | 0 | 0 |
| W. W. Martin, Ramsgate | 1,222 | 0 | 0 |
| J. Howland & Son, Mersham | 1,212 | 4 | 10 |
| Wallis & Sons, Maidstone | 1,167 | 0 | 0 |
| H. J. Smith & Son,* Maidstone | 1,099 | 0 | 0 |

* Accepted.

**Stretford.**—For alterations and additions to the Stretford Town Hall, for the Stretford Urban District Council. Mr. Ernest Worral, surveyor:—

| | |
|---|---|
| R Holland Higher Broughton | £1,350 |
| W. Thorpe, Cornbrook | 1,323 |
| S. Warburton, Miles Platting | 1,317 |
| Young, Tinker & Young, Harpurhey | 1,256 |
| R. Neil & Sons, Strangeways | 1,237 |
| R. Carlyle,* Old Trafford | 1,228 |
| Burgess & Galt, Ardwick | 1,105 |

* Accepted. [Surveyor's estimate, £1,335.]

**Walsall.**—For the erection of new building at their workhouse in the Pleck Road, Walsall, for the Guardians. Mr. H. E. Lavender, architect, Bridge Street, Walsall:—

| | |
|---|---|
| L. Jones, Wolverhampton | £9,225 |
| J. Dallow & Sons, West Bromwich | 8,750 |
| W. Wistance, Walsall | 8,739 |
| T. Hardy, West Bromwich | 8,580 |
| J. Mallin, West Bromwich | 8,579 |
| D. Roberts Handsworth | 8,550 |
| T. Hughes, Walsall | 8,410 |
| J. Guest & Son, Stourbridge | 8,400 |
| W. Kendrick & Sons, Walsall | 8,310 |
| G. H. Marshall, Smethwick | 8,261 |
| T. Tildesley, Willenhall | 8,249 |
| H. Wilcock & Co., Wolverhampton | 8,120 |
| W. Hopkins, Birmingham | 7,990 |
| W. H. Gibbs,* King's Heath, Birmingham | 7,979 |
| R. Harris, Shelfield | 7.930 |

* Accepted.

**Woolwich.**—For drainage and sanitary work at the Union Street, Woolwich, for the London School Board. Mr. T. J. Bailey, Board's architect:—

| | | | |
|---|---|---|---|
| W. Downs | £2,684 | W. J. Mitchell & Son | £2,497 |
| G. Parker | 2,656 | J. & C. Bowyer | 2,410 |
| Johnson & Co. | 2.574 | T. D. Leng | 2,237 |
| Ashby & Horner | 2,569 | Thomas & Edge* | 1,905 |
| Lathey Brothers | 2,517 | | |

* Recommended for acceptance.

**Wymondley (Herts).**—For alterations and additions to Wymondley House, for Mr. James W. Courtenay. Mr. W. Taprell Allen, F.R.I.B.A., architect, Hitchin and Stevenage. Quantities by Mr. Vincent Cattermole Brown, Paignton:—

| | |
|---|---|
| J. Spratt, Stevenage | £4,358 |
| Coulson & Lofts, Cambridge | 4,200 |
| S. Redhouse & Sons, Baldock | 4,049 |
| W. Seymour & Son, Hitchin | 3,955 |
| Willmott & Sons,* Hitchin | 3,489 |

* Accepted.

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**A New Workhouse and Infirmary Buildings** are being erected in Ducane Road, Wormwood Scrubbs, W., by the Hammersmith Board of Guardians. The contract is being carried out by Mr. Thomas Rowbotham, Small Heath, Birmingham. Messrs. Giles, Gough & Trollope are the architects. The buildings are of brick with stone dressings, and consist of two administrative blocks, laundry and workshops, four pavilions for the workhouse and two for the infirmary, receiving wards, special wards, operation rooms. A notable feature in the preliminary work was the construction of a railway from the Great Western main line to the site, about one and a half miles away. The amount of the contract is a little under £200,000.

# Bankruptcies.

[Abbreviations: R.O.—receiving order; P.E.—public examination: C.C.—county court; O.R.—official receiver; Adj.—Adjudication.]

DURING THE WEEK ending August 8th nine failures in the building and timber trades in England and Wales were gazetted.

W. J. WEBB, builder, Brixton. R.O. July 30th.

B. WEBSTER, builder and contractor, Cheadle Hulme. R.O. and adj. July 31st.

R. T. HARTOP, builder, Plymouth. P.E., East Stonehouse Town Hall, August 14th, at 12.

S. HORSEY, builder, Bournemouth. Gross liabilities £6,103; £703 to rank for dividend; assets £3,737.

SHAW & SINCLAIR, builders, Kilmarnock. Gross liabilities £2,415; assets £817; deficiency £1,597.

G. A & J AMBROSE, builders, and contractors, Colchester. Gross liabilities £1,624; assets £232; deficiency £442.

J. W. CARR, builder, Acton. First meeting, O.R.'s, 14, Bedford Row, W.C., August 13th, at 12. P.E., Brentford Town Hall, October 2nd, at 12.

F. G. B. PETTIT, builder, South Bermondsey. R.O. July 29th. First meeting. Bankruptcy Court, London, August 13th, at 12. P.E., same, September 22nd, at 11.30

C. SHEPHERDSON, builder, Hull. Gross liabilities £18,508, of which £18.192 are fully secured, leaving £316 to rank for dividend; assets £1,000; nett surplus £684.

J. SMITH & CO., marble masons and tilers, Catford. First meeting, 24, Railway Approach, London Bridge, S E., August 13th, at 12.30. P.E., Greenwich C.C., August 18th, at 1.

W. STOKES, builder and contractor, Reading. R.O., June 29th. Gross liabilities £8 332, of which £5,066 are fully secured; assets £1,998; deficiency £1,278. Debtor commenced business fifteen years ago without capital.

The following companies are to be wound up:—

ARGILLITE SLAB CO., LTD. E. S. Tregelles, 18, Cwrty-y-vil Road, Penarth, liquidator.

BADSLEY LANE LAND CO., LTD. R. Pashley, Rotherham, liquidator.

BOURNE ENGINEERING CO., LTD.

TYNEWYDD BRICKWORKS CO., LTD., Brynhedydd, Rhyl.

VRON AND OLD BRAICH SLATE QUARRIES, LTD.

# New Companies.

CANADIAN TIMBER AND SAWMILLS, LTD., timber growers, importers, &c. Capital: £30,000 in £1 shares.

GEORGE WILLIAMS, LTD., builders, contractors, house decorators, &c. Capital: £1,100 in £1 shares.

CONSTABLE, HART & CO., LTD., tar paviors, asphalters, stone, granite and lime merchants, &c., Franklin Street Kentish Town, N.W. Capital: £20,000 in £1 shares.

DAYBURNS, LTD., wholesale and retail dealers in oils, colours, papers, varnishes, brushes, &c., 5, London Road, Croydon. Capital: £2,000 in £1 shares.

JAMES PRINCE, LTD., quarry masters, stone merchants and cutters, masons, builders, &c., Birchover, Derbyshire. Capital: £4,000 in £1 shares.

CHAPMAN & LOWRY, LTD., builders, contractors, sanitary and hot-water engineers, joiners, &c., Haslemere, Surrey. Capital: £20,000 in £1 shares.

GAS PATENTS SYNDICATE, LTD., to acquire an invention known as the Dynamic Gas Producer (British Patent No. 3,783). Capital: £25,000 in £1 shares.

WARRINGTON ESTATES CO, LTD., landowners, builders and contractors, dealers in building materials, &c. Capital: £20,000 in £10 shares.

W. D. HENDERSON & SONS, LTD., dealers in cement, slates, tiles, bricks, &c., 55, Waring Street, Belfast. Capital: £10,000 in 1,000 shares of £10 each.

ANDERSON BROTHERS, LTD., boiler makers and engineers, roof builders, ironfounders, &c., Star Boiler Works, Accrington. Capital: £5,000 in £1 shares.

ARGUS PROPERTIES, LTD., to acquire messuages, lands, hereditaments and tenements, landowners, builders, decorators, &c. Capital: £100,000 in £10 shares.

DERBY OXIDE AND COLOUR CO., LTD., colour, paint and varnish manufacturers, &c., 30, Union Street, Burton-on-Trent. Capital: £30,000 in £10 shares.

DURO DECORATIVE ART, CO., LTD, makers of glass, Durolite, china, tiles, pottery, &c. Capital: £15,000 in £1 shares.

HARWICH BRICK AND TILE CO., LTD., brick and tile manufacturers, &c., Herbert Street, Chorley New Road, Lancashire. Capital: £3,000 in £1 shares.

NORTH WALES POWER AND TRACTION CO., LTD., electricians, electrical and mechanical engineers, &c. Capital: £270,000 in £5 shares.

NOTTINGHAM ELECTRICAL CO., LTD., suppliers of electricity for light, heat, motive power, &c., 13, Farmer's Factory, Sherwood Street, Nottingham.

ROBERT STEPHENSON & SON, LTD., Portland cement manufacturers and merchants, dealers in cement, lime, artificial stone, concrete, bricks, tiles, &c, Burwell, Cambridgeshire. Capital: £10,000 in £1 shares.

# Complete List of Contracts Open.

| DATE OF DELIVERY. | WORK TO BE EXECUTED. | FOR WHOM. | FROM WHOM FORMS OF TENDERS MAY BE OBTAINED. |
|---|---|---|---|
| | **BUILDING:** | | |
| Aug. 13 | Cummertrees, Annan. Scotland—Additions, &c, to School | School Board | Estate Office, Hoddom Castle, Cummertrees. |
| „ 13 | Eskdale—Farm Buildings | — | J. H. Rea, Gatehouse, Eskdale. |
| „ 13 | Penarth—School | U.D. School Board | G. A. Birkenhead. Caledonian Chambers, Cardiff. |
| „ 13 | Rastrick—Stabling, &c. | J. Ainley & Sons, Ltd. | J. Berry, 3 Market Place, Huddersfield. |
| „ 14 | Gortin, Ireland—Improvements to Church | — | E. J Toye, 20 Great James Street, Londonderry. |
| „ 14 | Heaton, Yorks—Pair of Semi-detached Houses | — | J. Ledingham, District Bank Chambers, Bradford. |
| „ 14 | London, S.E.—Out-Relief Stores | St. Olave's Union Guardians | Newman & Newman, 31 Tooley Street, London, S E. |
| „ 14 | Pwllheli, Wales—Nine Houses | — | H. Thomas, 7 Castle Ditch, Carnarvon. |
| „ 14 | Rathmullan, Ireland—Dwelling House | Miss Gallagher | J. P. M'Garth, Architect, Commercial Bldgs., Foyle St., Londonderry. |
| „ 14 | Easter Carnie, Skene—Additions, &c., to Farm | — | J. Rust, 224 Union Street, Aberdeen. |
| „ 15 | Newlyn—Mission Church | — | H. White, 1 Clarence Terrace, Penzance. |
| „ 15 | Kidwelly, Wales—Chapel | Church Trustees | J. Anthony & Sons, Coal Merchants, Anchor House, Kidwelly, Wales. |
| „ 15 | Epsom—Depot, &c | Urban District Council | E. R. Capon, Surveyor, Council Offices. Bromley Hurst, Epsom. |
| „ 15 | Pontlottyn. Wales—Vestry | — | Rev. R. Jones, Baptist Minister, Pontlottyn. |
| „ 15 | Epsom—Stables, &c, at Farm | Urban District Council | E. R. Capon, Surveyor, Council Offices, Bromley Hurst, Epsom. |
| „ 15 | Northampton—Carsheds, Workshops, &c. | Corporation | A. Fidler, Borough Engineer, Guildhall, Northampton. |
| „ 15 | Northampton—Power Station Buildings | Corporation | A. Fidler. Borough Engineer. Guildhall, Northampton. |
| „ 17 | Glasgow—Library | Corporation | G. B. Walker, 65 Bath Street, Glasgow. |
| „ 17 | Ottershaw, Chertsey—Alterations, &c., to Hospital | Joint Hospital Committee | C. Welch, Surveyor. London Street, Chertsey. |
| „ 17 | Stourbridge—Free Library | Urban District Council | F. Woodward, Architect, Town Hall, Stourbridge. |
| „ 17 | Cheadle—Tramway Works | Cheadle and Gatley U.D.C. | C. R. Brady, 13 Warren Street. Stockport, |
| „ 17 | Newchurch, near Warrington—Rebuilding Church | — | Travers & Ramsden, 44 Church Street, Leigh, Lancs. |
| „ 18 | Portsmouth—Portland Cement, &c. | Corporation | A. Hellard, Town Clerk, Town Hall. Portsmouth. |
| „ 18 | Ilford—Post-Office | Commissioners of H.M.Works,&c. | Secretary, H.M Office of Works, Storey's Gate. S.W. |
| „ 18 | Cardiff—Electrical and X-Ray Department at Infirmary | — | E. Seward, Architect, Cardiff. |
| „ 18 | Guildford—Lodge | Joint Hospital Board | E. L. Lunn. 36 High Street, Guildford. |
| „ 18 | Hasland. Derby—School, &c. | School Board | Rollinson & Son, 13 Corporation Street, Chesterfield. |
| „ 18 | North Shields—Accumulator House | Tynemouth Corporation | J F. Smillie, Borough Surveyor, Tynemouth. |
| „ 18 | Acton—Isolation Hospital Building | District Council | D. J. Ebbetts, 242 High Street, Acton, W. |
| „ 18 | Guildford—Additions, &c., to Hospital | Joint Hospital Board | A. J. Sturges, Architect, High Street, Guildford. |
| „ 19 | Gillingham, Kent—Brick Wall | Urban District Council | F. C. Boucher, Clerk, Council Offices, New Brompton. |
| „ 19 | Blackpool—Portland Cement | Highways Committee | J. S. Brodie, Borough Engineer, Town Hall, Blackpool. |
| „ 19 | Llandilofawr, Wales—Organ-Chamber, &c. | — | D. Jenkins, Architect, Llandilo. |
| „ 20 | Epsom, Surrey—Foundations of Asylum | London County Council | R. W. Partridge, 6 Waterloo Place, London, S.W. |
| „ 20 | Upton-on-Severn, Worcester—Isolation Hospital | Rural District Council | L. Shephard & Son. 51 Fougate Street, Worcester. |
| „ 20 | Wombwell, Yorks—Six Houses | Mrs. E. Bashforth | A. B. Linford, Architect, Carlton Villa, Wombwell. |
| „ 22 | Middleton-on-the-Wolds, Driffield—Classroom at School | — | H. J. Phillips, Middleton-on-the-Wolds. Driffield. |
| „ 24 | Penrith—Wall | Rural District Council | T. Watson, Surveyor, Council Offices, Kirkoswald. |
| „ 24 | Colwyn Bay—Hospital &c. | Urban District Council | W. Jones, Engineer, Council Offices Station Road, Colwyn Bay. |
| „ 24 | Selby Oak—Boiler-house at Workhouse | King's Norton Union Guardians | C. Whitwell & Son, Architects, Temple Row, Birmingham. |
| „ 25 | Pontypridd Public Offices | Urban District Council | H. T. Hare, 13 Hart Street London, W.C. |
| „ 25 | Birmingham—Enlargement of Post Office | Commissioners of H.M.Works &c. | Secretary, H.M. Office of Works, &c, Storey's Gate, S.W. |
| „ 25 | Barry Dock, Cardiff—Branch Post Office | Commissioners of H.M.Works,&c | Secretary, H.M. Office of Works, &c., Storey's Gate, S.W. |
| „ 26 | Troedyrhiw—School | Merthyr Tydfil School Board | J. Ll. Smith, Board's Architect, Aberdare. |
| „ 26 | Leicester—Enlargement of Head Post-Office | Commissioners of H.M.Works,&c. | Secretary, H. M. Office of Works, Storey's Gate, S.W. |
| „ 27 | Halifax—Administrative Block | Guardians | W. C. Williams, 29 Southgate, Halifax. |
| „ 31 | New Malden—Offices, &c. | Maldens and Coombe U.D.C. | W. Hope, Architect, Seymour Road, Hampton Wick. |
| „ 31 | Bristol—Warehouses | Docks Committee | W. W. Squire, Engineer, Underfall Yard, Cumberland Rd., Bristol. |
| „ 31 | Turnberry, Glasgow—Hotel | Glasgow & South Western Rly. | J. Miller, 15 Blythewood Square, Glasgow. |
| Sept. 14 | Penygraig, Wales—Departments for Boys and Girls | Ystradyfodwg School Board | J. Rees, Hillside Cottage, Pentre. |
| „ 14 | Pontypridd—Public Offices | Urban District Council | H. T. Hare, 13 Hart Street, London, W.C. |
| „ 14 | Hemsworth—Fifteen Houses | — | J. Simmons. Hague Lane, Hemsworth. |
| „ 14 | Westgate—Rebuilding Hotel | — | J. Jackson, Architect, Barry Street, Bradford. |
| „ 14 | Leeds—Five Houses, &c. | F. Terry | W. M. Coggill, Architect, Stourton, Hunslet. |
| „ 14 | Nottingham—School | School Board | F. B. Lewis, Architect. Barry Street, Bradford. |
| „ 14 | Bramhope—House | — | Child & Co., 149 Park Lane, Leeds. |
| „ 14 | Woodhouse—Club Premises | North-West Ward, Liberal Association. | T. A. Buttery and S. B. Birds, 1 Basinghall Square, Leeds. |
| „ 14 | Whitby—Additions to Brewery | R. D. Spaven & Co. | H. G. Walker, Architect, Skinner Street, Whitby. |
| „ 14 | Thurles—Residence | — | W. Maher, Main Street, Thurles. |
| „ 14 | Glyncorrwg—Four Houses | — | D. Lewis, Glyncorrwg. |
| „ 14 | Winfrith—Alterations to House | E. Hughes | F. R. Bates, Architect, Newport, Mon. |
| „ 14 | Bishop Auckland—Minister's House | — | T. E. Davidson, Architect, Newcastle-on-Tyne. |
| „ 14 | Hereford—Repository | Greenland's, Ltd. | W. W. Robinson, Architect. King Street, Hereford. |
| „ 14 | Brampton—Residence | — | Rev. T. W Willis, Lanercost Vicarage, Brampton. |
| „ 17 | Preston—Power Station, &c. | Corporation | W. H. Tittensor, 25 Burrow Road, Preston. |
| „ 17 | Wern, Salop—Market House and Assembly Hall | Urban District Council | J. Brown, 12 Castle Street, Shrewsbury. |
| No date | Wimbledon—Two Blocks of Flats | — | C E. L. Parkinson. 44 Bedford Row, W.C. |
| | **ENGINEERING:** | | |
| Aug. 14 | Letterkenny, Ireland—Acetylene Gas Plant | Guardians | R S. Watters, Clerk, Board Room. Letterkenny. |
| „ 15 | Willesborough, Kent—Lighting | East Ashford R.D.C. | W. J. Spicer, Clerk, Council Offices, Hunter Road, Willesborough. |
| „ 15 | Northampton—Electrical Plant, &c. | Corporation | A. Fidler, Borough Engineer, Guildhall, Northampton |
| „ 15 | Boskoop, Holland—Acetylene Plant | Town Council | P. A. Ottalander, Council Offices, Boskoop, Holland. |
| „ 17 | Bradford—Fire Escapes | Poor Law Union | F. Holland, 11 Parkinson's Chambers, Hustlergate, Bradford. |
| „ 18 | Lyndhurst—Sewage Disposal Works | New Forest Rural District Council | Combes & Bennett, Engineers, Midland Bank Chbrs., Southampton. |
| „ 18 | Victoria, Australia—Telephone Cable | — | Deputy Postmaster-General, General Post Office, Melbourne. |
| „ 18 | Portsmouth—Dredging, &c. | Corporation | A. Hellard, Clerk. Town Hall Portsmouth. |
| „ 19 | Port Adelaide—Railway Materials | — | Chief Mechanical Engineer, Islington, South Australia. |
| „ 19 | Maesteg, Wales—Waterworks | Urban District Council | J Humphreys, Council's Engineer, Town Hall Chambers, Maesteg. |
| „ 20 | Emden, Belgium—Four Dredger Boats | Königliche Wasserbau Inspection | M. Van Jindelt, Bausecretär. Emden. |
| „ 20 | Gerona, Spain—Telephone System | — | Directorate-General of Posts and Telegraphs, Carretas 10, Madrid. |
| „ 21 | Chartham Downs, Canterbury—Extension of Fire Mains | Asylums Committee | W. J. Jennings, 4 St. Margaret Street, Canterbury. |
| „ 21 | Rotherham—Boiler | Sewerage Committee | R. E. W. Berrington, Engineer, Bank Buildings, Wolverhampton. |
| „ 21 | West Ham—Traction Switchboard, &c. | Town Council | J. K. Bock, Engineer, Abbey Mills, West Ham. |
| „ 22 | Newton in-Makerfield—Ferro-concrete Reservoir | Urban District Council | C Cole, Clerk, Town Hall, Earlestown, Lancs. |
| „ 22 | Avila, Spain—Electric Power Plant | — | Secretariat of the "Ayuntamiento," Avila, Spain. |
| „ 24 | Highworth, near Swindon - Waterworks | Rural District Council | F. Bedman, 34 Wood Street Swindon. |
| „ 24 | Llanrwst, Wales—Extension of Water Mains | Rural District Council | R. R. Owen. Clerk. Union Offices, Llanrwst. |
| „ 24 | Manchester—Weighbridge, &c. | Electricity Committee | City Surveyor Town Hall, Manchester. |
| „ 25 | Clutton—Waterworks | Rural District Council | W. F. Bird, Engineer, Midsomer Norton, near Bath. |
| „ 26 | Charleroi-Nalinnes, Belgium—Railway | Société Nationale des Chemins de Fer Vicinaux. | Director-General, 14 Rue de la Science, Brussels. |
| „ 28 | Apulia, Italy—Aqueduct | — | Commercial Intelligence Branch, Board of Trade, 50 Parliament Street, S.W. |
| „ 29 | Devonport—Gasholder | Corporation | S. E. Stevenson, Engineer Gasworks, Devonport. |
| „ 29 | Kempston—Waterworks | Urban District Council | Beesley, Son & Nichols, 11 Victoria Street, Westminster, S.W. |
| „ 31 | Belfast—Graving Dock | Harbour Commissioners | G. F. L. Giles, Engineer, Harbour Office, Belfast. |
| „ 31 | Aberdeen—Quay Widening | Harbour Commissioners | R. G. Nicol, Engineer. Aberdeen. |
| Sept. 1 | Hounslow—Fire Engine | Urban District Council | H. J. Baker, Clerk. Town Hall, Hounslow. |
| „ 2 | Corrientes—Waterworks | — | Engineer-in-Chief, Rividavia 1,255. Buenos Aires. |
| „ 8 | Dixmude-Ypres-Paperinghe—Railway | Société Nationale des Chemins de Fer Vicinaux. | Director-General, 14 Rue de la Science, Brussels. |
| „ 12 | Sydney—Electric Tramway Generating Set | Railway Commissioners | Agent-General for New South Wales, 9 Victoria Street. S.W. |
| „ 20 | London, W.—Sweeping Machine | Paddington Borough Council | E. B. B Newton, Borough Surveyor, Town Hall, Paddington, W. |
| „ 22 | Jassy. Roumania—Waterworks | Corporation | Mayor, Jassy. Roumania |
| „ 23 | Estremoz-Castello de Vide—Railway | Portugal State Railways | Sessions Hall, Council of Administration of State Rlys., Lisbon. |
| „ 28 | Launceston, Tasmania—Electric Meters | — | J. Terry & Co., 7 Great Winchester Street, E.C. |
| Oct. 1 | Utrecht, Netherlands—Electricity Supply Station | Town Council | Gemeente-Secretaire of Utrecht. |
| „ 6 | London, S.E.—Steam Engines | London County Council | County Hall, Spring Gardens, S.W. |
| „ 30 | Marina, Upper Barracca, Malta—Lift | Crown Agents for the Colonies | Receiver-General and Director of Contracts, Valletta, Malta. |
| Dec. 15 | Los Andes, Chili Railway | — | Commercial Intelligence Branch, Board of Trade, 50 Parliament Street, S.W. |
| 1904. Feb. 1 | Cairo—Three Road Bridges over Nile | Ministry of Public Works | Commercial Intelligence Branch, Board of Trade, 50 Parliament Street, S.W. |

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A GOOD CARPENTER and JOINER, age 50, wants job; thoroughly experienced. and tools to work with.—C. POTTER, 100, Warren Road, Leytonstone, N.E.

BUILDER'S CLERK (23) wants Situation; good knowledge of building construction, abstracting, and billing. Drawings from rough sketches. Good references. Wages 32s.—F. A. G., 10, Braemar Road, Brentford.

CAPABLE ARCHITECT'S ASSISTANT disengaged, 5 years' experience Quantities, Competition, Working Drawings, Details, Specifications, Levelling, Surveying, and office routine.—Box 2532, BUILDERS' JOURNAL Office, 9, East Harding Street, E.C

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GENERAL or WORKING FOREMAN seeks engagement. Good references. Aged 41. Carpenter by trade.—W. N., 19, Rumsey Road, Stockwell, S.E.

GOOD MASON wants Job. Abstainer. Good draughtsman. Capable of setting out. References.—MASON, Stone Works, Frinton-on-Sea, Essex.

HOT WATER FITTER'S MATE wants Work; good, strong; age 20; knowledge of smithing.—A. D., 89, Denmark Road, West Kilburn.

JUNIOR ASSISTANT DISENGAGED. Salary no object.—Box 2524, BUILDERS' JOURNAL Office, 9, East Harding Street, Fetter Lane, E.C.

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YOUTH, with slight knowledge, requires three years' apprenticeship to a Builder. Small premium.—J. H., 22, Carisbrooke Road, Walthamstow.

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| 4. **Leather Lane,** Holborn | 1s. 0d. each. |
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# Complete List of Contracts Open *continued*

| DATE OF DELIVERY. | | WORK TO BE EXECUTED. | FOR WHOM. | FROM WHOM FORMS OF TENDERS MAY BE OBTAINED |
|---|---|---|---|---|
| | | **FURNITURE:** | | |
| Aug. | 17 | Rustington, near Littlehampton—Furniture, &c. | Metropolitan Asylums Board | T. D. Mann, Clerk. Board's Offices, Embankment, E.C. |
| " | 23 | Burnley—Furnishing Schools | ——— | A. J. Shaw & T. H. Vowles, Architects, Mercantile Chmbrs. Burnley. |
| | | **IRON AND STEEL:** | | |
| Aug. | 18 | Portsmouth—Ironmongery, &c. | Corporation | A. Hellard, Clerk, Town Hall, Portsmouth |
| | | **PAINTING AND PLUMBING:** | | |
| Aug. | 15 | Crewe—Painting | Electric Lighting Committee | H. H. Denton, Corporation Electricity Works, Edleston Rd, Crewe. |
| " | 17 | Mansfield—Painting. &c. | Corporation | R. F. Vallace. White Hart Chambers, Mansfield. |
| " | 18 | Portsmouth Oils and Paints | Corporation | A. Hellard, Clerk, Town Hall, Portsmouth. |
| " | 20 | Copenhagen, Denmark—Oils. Varnish, &c. | Danish State Railways | Chief, Locomotive Department. Danish State Rlwys., Copenhagen. |
| " | 21 | Leeds—Painting, &c., at Infirmary | Guardians | J. H. Ford, Clerk, Poor Law Offices, Leeds. |
| | | **ROADS AND CARTAGE:** | | |
| Aug. | 17 | Southend-on-Sea—Making-up | Corporation | E. J. Elford, Borough Surveyor, Southend-on-Sea. |
| " | 17 | Cheadle—Tramways Works | Cheadle and Gatley U.D.C | C. R. Brady, 13 Warren Street. Stockport. |
| " | 17 | Barnet—Granite, &c | Urban District Council | H. W. Poole. Clerk, 40 High Street, Barnet. |
| " | 18 | Portsmouth—Gravel, Paving. Granite, &c. | Corporation | A. Hellard, Clerk, Town Hall, Portsmouth. |
| " | 18 | Mountain Ash, Wales—Materials &c. | Urban District Council | Borough Engineer, Town Hall, Macclesfield. |
| " | 18 | Barnet Materials | South Mims R.D.C. | G. D. Byfield, 16 High Street, Barnet. |
| " | 19 | Wimbledon—Tar Paving, Playground, &c. | Education Committee | Thomson & Pomeroy, Architects, Hill Road, Wimbledon. |
| " | 19 | Manchester—Setting Back | Parks Committee | City Architect. Town Hall, Manchester. |
| " | 24 | Bushey, Herts—Widening, &c. | Hertfordshire C.C. | U. A. Smith, 41 Parliament Street, Westminster, S.W. |
| " | 24 | Stamford—Private Street Works | Corporation | T. W. Hayward 8 St. Mary's Street, Stamford. |
| " | 24 | Stevenage—Levelling, &c. | Urban District Council | W. O. Times, Clerk, Council Offices, Orchard Road, Stevenage. |
| " | 31 | Farnborough—Materials, &c. | Urban District Council | J. E. Hargreaves, Surveyor, Town Hall, Farnborough. |
| Sept. | 21 | Paddington—Making-up and Paving Roads | Borough Council | E. B. B. Newton, Borough Surveyor, Town Hall, Paddington, W. |
| | | **SANITARY:** | | |
| Aug. | 13 | Castletown, Ireland—Sewerage Works | Rural District Council | R. Evans, 53 South Mall, Cork. |
| " | 15 | Cudworth—Scavenging | Urban District Council | W. E. Raley, Clerk, Barnsley. |
| " | 15 | Tadcaster—Sewers, &c. | Rural District Council | F. Massie, Engineer, Tetley House, Wakefield. |
| " | 17 | Mansfield—Sewage-Disposal Works | Town Council | R. F. Vallance, Borough Surveyor, Mansfield. |
| " | 17 | Wilton, Wilts—Sewers, &c. | Rural District Council | Lemon & Blizzard, 38 Silver Street Salisbury. |
| " | 17 | Longton, Staffs—Sewage-Disposal Works | Town Council | J. W. Wardle, Borough Surveyor, Courthouse, Longton. |
| " | 18 | Leatherhead—Sewers, &c. | Urban District Council | T. Salkfield, Engineer, Council Offices, Leatherhead. |
| " | 18 | Portsmouth—Drain Pipes, &c. | Corporation | A Hellard, Town Clerk, Town Hall, Portsmouth. |
| " | 18 | Lyndhurst—Sewage-Disposal Works | New Forest R.D.C. | Combes & Bennett, Engineers, Midland Bank Chambers, Southampton. |
| " | 21 | Coventry—Pipes | Corporation | J. E. Swindlehurst, City Engineer, St. Mary's Hall, Coventry. |
| " | 26 | Strood, Kent—Storm-Water Drainage Works | Rural District Council | W. Brooke, Surveyor, Council Offices. Strood. |
| " | 31 | Aylesbury—Sewage-Disposal Works | Urban District Council | G. Chatterton, 6 The Sanctuary, Westminster, S.W. |
| Sept. | 2 | Thames Ditton—Sewers &c. | Urban District Council | E. A. Everett, Council Offices, Portsmouth Road, Thames Ditton. |
| | | **TIMBER:** | | |
| Aug. | 14 | Oldbury—Firewood | U.D. Education Committee | S. Vernon, Secretary, Public Buildings Oldbury. |
| " | 18 | Portsmouth—Timber | Corporation | A. Hellard, Town Clerk, Town Hall, Portsmouth. |

# List of Competitions Open.

| DATE OF DELIVERY. | | DESIGNS REQUIRED. | AMOUNT OF PREMIUM. | DEPOSIT REQUIRED FOR CONDITIONS, &c. | BY WHOM ADVERTISED. |
|---|---|---|---|---|---|
| Aug. | 31 | Blackpool—New Offices | ——— | £1 1s. | C. Arthur, 34 Victoria Street, Blackpool. |
| Sept. | 12 | Stonehaven, Scotland—Alterations and Additions to Town Hall. | ——— | ——— | G. Murdoch, Borough Surveyor, Stonehaven. |
| " | 12 | Howden, Yorks—Sewerage Improvement | £15 and commission. | ——— | H. Green, Clerk, Council Offices, Howden. |
| " | 14 | Heywood—Library | £30, £20, £10. | ——— | J. A. Settle, Borough Engineer, Municipal Buildings, Heywood. |
| Oct. | 2 | Bromley, E.—Public Library | £75, £25. | 10s. 6d. | H. Heckford, Borough Surveyor, Council Offices, High Street Poplar. |
| " | 12 | Rawtenstall—Free Library, &c. | £100, £50, £30. | £2. | A. W. Lawson, Borough Surveyor, Municipal Offices, Rawtenstall. |
| 1904. Mar. | 31 | Vienna—Machinery to Lift Boats on Canal | 100,000, 75,000 and 50,000 kronen. | ——— | Austro-Hungarian Consulate-General, 22 Laurence Pountney Lane, E.C. |
| No date | | Gillingham—School | ——— | ——— | E. T. Atchison, 8 Waterloo Road, New Brompton, Kent. |

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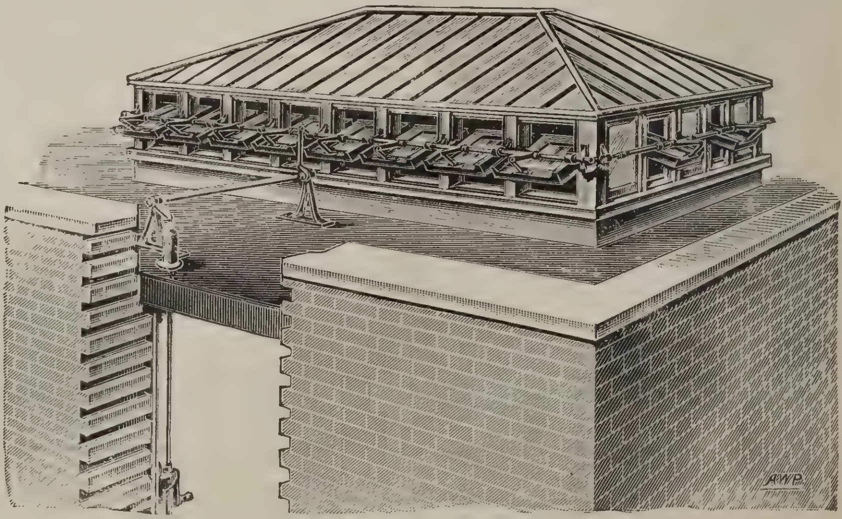

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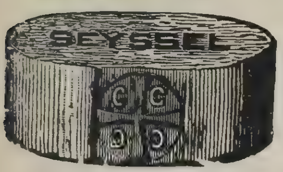

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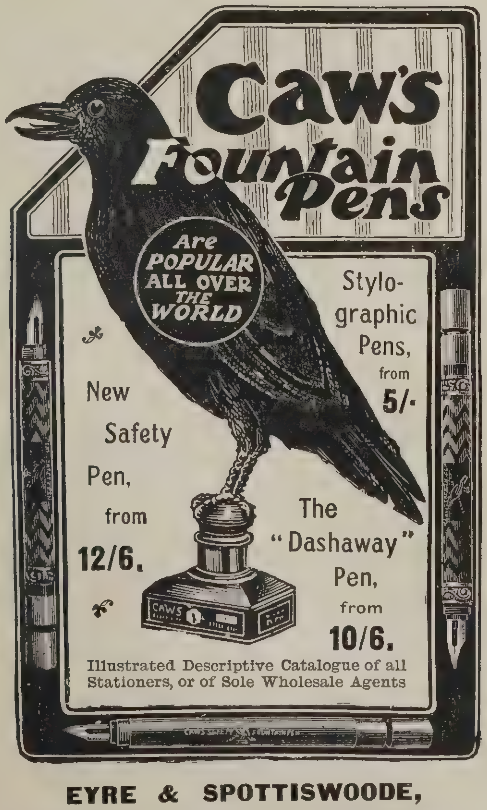
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## GREENWICH LIBRARY COMPETITION.

At last week's meeting of the Greenwich Borough Council the Library Committee reported that Mr. John Belcher, A.R.A., who acted as assessor in the competition of designs, had expressed his willingness, without further fee, to advise the Council as to the selection of a design for the central library. The town clerk had laid before Mr. Belcher a proposal made by Mr. Sidney R. J. Smith, F.R.I.B.A., to prepare working drawings and to take out quantities for the carrying out of his design, and that in the event of no satisfactory tender being obtained to carry out the work within the limit of price laid down by the conditions under which the first premium was awarded him, Mr. Smith should be paid no commission, the quantity surveyors on their part also undertaking in that event to limit their claim to £30 for the out-of-pocket expenses. Mr. Belcher was of opinion that the Council should concur in the proposition made by Mr. Smith, and he considered that Messrs. Fowler & Hugman, of 5, Craig's Court, Charing Cross, W.C., who were proposed by Mr. Smith as quantity surveyors, were a firm to whom the work might be entrusted. The Committee reminded the Council that the possibility of the carrying out of Mr. Smith's design was dependent upon the fixing of the building line in Tunnel Avenue and the acceptance by the London County Council of the offer which had been made for the purchase of the site at the junction of Woolwich Road and Tunnel Avenue. The London County Council had not at present informed this Council whether its offer to purchase that site was accepted. It was recommended that in the event of the building line being so defined as to admit of the carrying out of Mr. Smith's design, and upon the acceptance by the London County Council of this Council's offer for the purchase of the site, an agreement be prepared by the town clerk, in consultation with the chairman and Mr. Belcher, to be signed by Mr. Smith, making provision for the conditions under which he is to be instructed to proceed with his plans and limiting the liability of the Council, as proposed; that upon the signature of the agreement Mr. Smith be instructed to proceed with the working drawings on the terms proposed; and that Messrs. Fowler & Hugman be instructed to take out quantities, provided they agree to the arrangement.—This was adopted.

## Coming Events.

**Wednesday, August 12.**
INSTITUTE OF SANITARY ENGINEERS, LTD.—Meetings of Examination and Literary Committee at 3.30 p.m., General Purposes and Finance Committee at 4.15 p.m., Election Committee at 5.15 p.m., and Council Meeting at 7 p.m.

**Tuesday, Sept. 1, to Friday, Sept. 4.**
IRON AND STEEL INSTITUTE (Barrow-in-Furness)—Annual Meeting Inaugural address by Mr. Andrew Carnegie on "Developments of the British and American iron industry during the last thirty years." Mr. R. A. Hadfield on "Alloys of Iron and Tungsten." Mr. J. E. Stead and Mr. A. W. Richards on "The Restoration of dangerously Crystalline Steel by Heat Treatment." Messrs. J. E. Stead and A. Windsor Richards on "Sorbitic Steel Rails." Mr. Thomas Baker on "The Influence of Silicon on Iron." Prof. E. D. Campbell on "Diffusion of Sulphides through Steel." Mr. William Campbell on "The Heat Treatment of Steel." Mr. R. M. Daelen on "The Rolling of Large Pipes." Mr. D. A. Louis on "The Regulation of the Combustion in Coke-oven Practice." Mr. W. F. Pettigrew on "The Fuel used in the Barrow-in-Furness District." Mr. C. H. Ridsdale on "The Diseases of Steel." Prof. A. Stansfield on "Carbon in Iron."

**Monday, August 17.**
JUNIOR INSTITUTION OF ENGINEERS.—Summer meeting at Sheffield. Opening by the Lord Mayor at the Town Hall at 11 a.m. Visit to Messrs. Davy Brothers' works, and afterwards to Messrs. Hadfield's Steel Foundry Co.

**Tuesday, August 18.**
JUNIOR INSTITUTION OF ENGINEERS.—Excursion to Haddon Hall and Chatsworth.

**Wednesday, August 19.**
JUNIOR INSTITUTION OF ENGINEERS.—Visit to Messrs. Charles Gammel & Co.'s Works in the morning, and Messrs. J. Dixon & Sons in the afternoon.

**Thursday, August 20.**
JUNIOR INSTITUTION OF ENGINEERS.—Excursion to Castleton.

**Friday, August 21.**
JUNIOR INSTITUTION OF ENGINEERS.—Excursion to the Toledo Steel Works of Messrs. J. H. Andrew & Co. and The Suffolk Works of Messrs. T. Turner & Sons. Summer Dinner in the evening at Royal Victoria Hotel, Sheffield.

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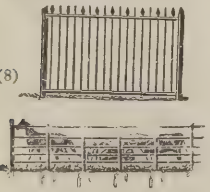

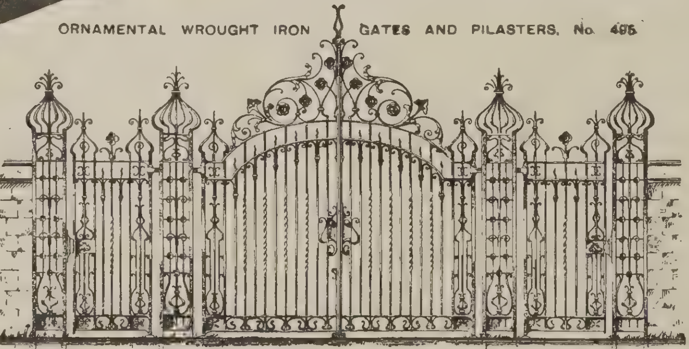

H. HART, Drain & Chimney Cleansing Machine Manufacturer,
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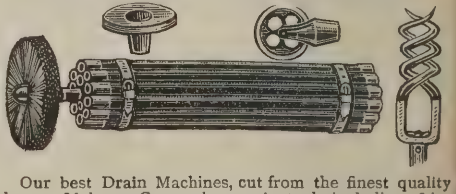

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THE

BUILDERS' JOURNAL

AND ARCHITECTURAL RECORD.

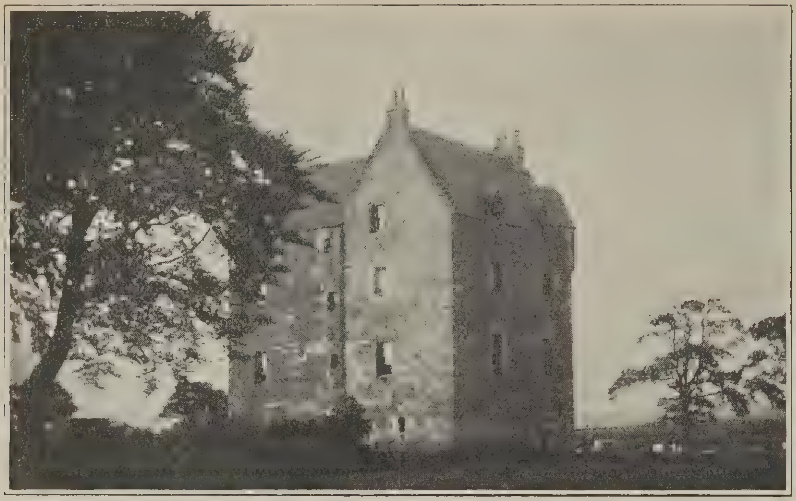
August 19, 1903. Vol. 18, No. 445. 9, East Harding Street, E.C.

### The Building Trade and Mr. Chamberlain's Proposals.

THE building trade of this country is very directly concerned with Mr. Chamberlain's fiscal proposals. We are largely dependent on other countries for certain building materials. Brick and stone are home products and may be set on one side; but wood, cement, joinery, rolled iron joists, glass and numerous other goods are imported in great quantities from countries which would be penalized by Mr. Chamberlain's tariffs. A few weeks ago we published some figures showing how the McKinley tariff of 40 per cent. on manufactured granite goods had affected the Aberdeen trade, the total value of granite shipped from that port to the United States having dropped from £112,382 in 1891 to £19,710 in 1902: so that the more favourable tariffs prevalent with our colonies (Canada being only 20 per cent. and Africa 10 per cent.) has led granite merchants to very seriously consider the Colonial Secretary's scheme. Then as regards cement. During recent years the English market has been invaded with foreign cements: in 1901, more than 220,000 tons came from Germany, Belgium and the United States, as compared with 105,000 tons in 1900. America is likely to be a great competitor for the cement market of Canada; the latter country having largely deserted us of late in favour of the enterprising nation next her boundaries. From Scandinavia and Russia, of course, we import most of our timber, and it would seem that preferential rates for our colonies would not be an unmitigated advantage in this particular. There are such things, too, as Belgian girders, which have been shipped over here and sold below home manufacturers' prices; while, as a new development, reports speak of the opening-up of Norwegian slate quarries on the Vossebygden, where there are whole mountains of slates. On the other hand, good reports come to hand of cement in Rhodesia, which recalls the fact that the resources of our colonies are as yet undeveloped, even unknown. Up to the present Mr. Chamberlain has done little more than outline his proposals. It is hardly possible, therefore, to come to any definite conclusion in regard to them. During the forthcoming autumn, it is understood, he will give full details, and till then an open mind should be kept. Two facts, however, should not be forgotten—that the imposition of duties on foreign imports would be likely to increase the cost of such building materials as wood, cement, glass and iron; while it would give home manufacturers a more profitable market and would get rid of cut-throat competition in some branches of made-up joinery, wallpapers and other goods; in addition to which there is the great general question of the expediency of the scheme as a protection to British trade and, as a consequence, of the position of the British nation among the paramount powers of the world. Attention to different aspects of Mr. Chamberlain's proposals is being drawn by persons engaged in various walks of life. One in particular deserves notice. As a correspondent to the "Times" points out, there are very few works in the country that are fully employed. The taking away of orders by German or American competitors has the serious effect of leaving our works partially employed. "I will engage to say that the difference between any works in this country turning out, say, three-fourths of its capacity compared with its full capacity at the same rates is equivalent to a satisfactory profit on the whole capital employed. But if we allow foreigners to take possession of our own markets in the way they are now doing it is impossible to obtain the profit which can only be gained when works are employed to their full capacity. The Americans and Germans know this thoroughly. It pays them to make a surplus more than they require at home and to dump this down in our free markets—and this altogether apart from the fact of their having the two prices from their tariff arrangements, of which so much has been written—because they keep their works fully instead of partially employed, which to the manufacturer is a profit in itself apart altogether from consideration of price. His fixed charges have to be paid whether running full time or three-quarter time, and these charges divided over the larger output form a profit in themselves. If the whole of the works in the country could be kept full of employment there would be an increased demand for workmen, and their wages would naturally and inevitably rise. The employer would be well able to pay this increase because he would be making more money on account of work being turned out to the full capacity of his establishment." Manufacturers are very well aware of these facts. Building trade firms, too, know what a difference it makes to them when their men are fully employed. The foreign-made door is an example of what we have to contend against in this country. How many joinery firms know to their cost what competition in cheap doors means! We may be sure that they would appreciate the imposition of some duty on foreign goods that would give them a more livable interest in their own home trade.

### Non-Flammable Wood.

THE terrible disaster at Paris has shown, more than anything else, how essential it is that no ordinary wood be used in underground railways. "Tubes" may be regarded as horizontal chimneys with forced draught: hence it is clearly wrong to construct carriages of combustible material: such carriages would burn fiercely enough under ordinary circumstances, but when they are rapidly drawn through tunnels in which they fit like pistons it needs no words to explain how soon a spark will kindle into flame. The vast amount of smoke given off by burning wood has also to be reckoned with—that is to say, adequate provision of ventilating shafts is necessary, as the Paris authorities are now painfully aware. At the present moment the greatest attention is being directed to the London "tube." Here there is a great deal of inflammable wood, for not only is it used in the carriages, but platforms, sleepers and station boxes are built of it. The directors of the railway necessarily find themselves in a trying position and take occasion to assure the public of the precautions adopted to avoid such a catastrophe as that which happened last week in Paris. We are told of chemical fire-extinguishers by which an outbreak could be immediately quenched, and of hydrants on the stations; all of which is true. We are also asked to remember that the trains run singly in the tunnels, not on double lines as in Paris. But the fact is not mentioned that the trains in the London "tube" fit within an inch or so of the casing, and that the only exits are consequently at the ends; in which circumstances a panic would be terrible. There is, however, no cause for people to frighten themselves. Going to and fro in great cities, they run great risks every day—risks of accidents and disease—yet they do not keep out of cities on that account. There need be no excessive nervousness about travelling on the "tube." We are of opinion, however, that the present woodwork should be replaced by non-flammable wood. This is being done on the Baker Street and Waterloo line, and such wood has also been used in the new carriages for the electrified "District" railway. In fact, non-flammable wood must be the wood of the future in all places where public safety is a first consideration—in buildings as well as in underground railways. The cost is somewhat more than for ordinary wood, but considerations of life take precedence to those of cost; and this will be more and more insisted upon by those in authority.

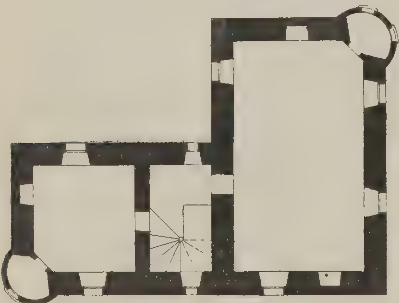


GILBERTFIELD CASTLE.

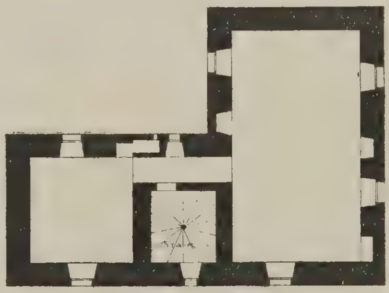
# GILBERTFIELD CASTLE.

By J. JEFFREY WADDELL.

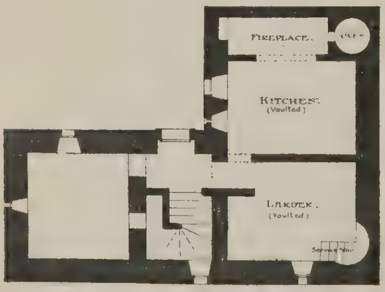
THIS castle, which bears the date of 1607 on one of its dormers, is situated near the base of Dechmond Hill, about a mile and a half from the village of Newton and two miles from the Clyde, in the county of Lanark. It is L-shaped on plan, and is four storeys high. The entrance doorway, which is lintelled, is in the angle, and is commanded by a shot-hole from the kitchen, and also from above. There has been a carved panel immediately above the lintel of the door. The castle is a very good example of the period of transition from the more ancient keep to the modern mansion. The windows, especially on the ground floor, are small, and all are barred with iron. The walls are about 3ft. 4in. thick. On the ground floor are the kitchen, larder and a room which may have been the armoury. These rooms and the entrance-lobby are barrel-vaulted, the height being about 10ft. 8in. The kitchen fireplace is large, measuring 14ft. by 5ft., and has a fine round arch, with an ingle-seat at one end and an oven at the other. A stone sink with a drain occupies a recess in the wall. Large rusty iron cleeks still remain in the ceiling, testifying to a hospitality and plenty long since passed away. There is a small service stair from the larder to the dining-room, which is immediately over. The latter is a large room 27ft. by 17ft., with a ceiling 14ft. 3in. high. This room had a large fireplace, which, however, has been contracted in modern times. A parlour, connected with the dining-room by a short corridor, occupies the remainder of the first floor. In the thickness of the parlour wall a small closet with loophole commands the entrance. The parlour, as will be seen from the plan, has no direct communication with the staircase. The second floor has been modernized, but has only been used originally as bedrooms. The attic floor is similar, with the addition of two very fine little oriels. These, while they may have been used by the lady of the house as bowers, could also be utilized to command the base of the walls. In elevation these features harmonize with the crow-stepped gables and together with the dormer windows, which are ornamented with crescent finials, monograms, dates, &c., give character to the castle. The walls are of grey sandstone, rough-cast in places; the flooring joists and rafters are of oak (jointed with oak pins) and the slates are also fixed with oak trenails. The ridge is of sandstone. The castle was erected by and was for many years the residence of "Hamilton of Gilbertfield," a poet well-known in Scottish literature and greatly praised by Burns, the friend and correspondent of Allan Ramsay. Since then it has fallen on evil days. It has recently been sub-divided to form dwellings for several families of miners. Surely some better fate might have been meted out to it.



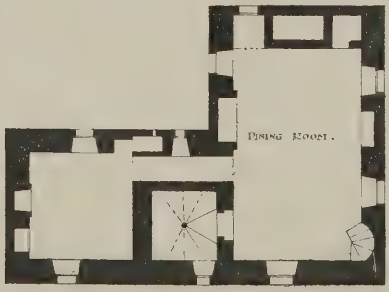
PLAN OF ATTIC FLOOR.



PLAN OF SECOND FLOOR.



PLAN OF GROUND FLOOR



PLAN OF FIRST FLOOR.

# FIREPROOF FLOORS.*

By W. KAYE PARRY, F.R.I.B.A., M.I.C.E.

WHATEVER may be the differences in opinion regarding the relative merits of various types of fireproof, or rather fire-resisting, floors it will not be denied that the ordinary timber floor consisting of flooring boards, joists and a lath and plaster ceiling leaves much to be desired. Whilst improvements in methods of construction of human habitations have been numerous in other directions, architects and builders display a tendency to cling to the use of old-fashioned floors. It is not easy to find substantial reasons for such conservatism, for little can be said in favour of timber floors except that they are so simple as to come within the knowledge of the veriest tyro in construction and so cheap as to form an irresistible allurement to the economist and the jerry-builder.

Sanitarians have raised their voices against a type of floor which affords unlimited opportunities for the secretion of the nimble bacillus, not to speak of the larger varieties of the great verminous world of creation which prey upon the human family. Utilitarians have entered their protest against a method of building which cannot claim to be reasonably durable, and which not infrequently develops indications of instability from the very inception of its ephemeral existence. Fire-insurance companies have abundant reason to realize the insecurity inseparably connected with these horizontal strata which offer such tempting pabulum for the ravages of the devouring element. Nevertheless, the 11in. by 2in. joist, the 1in. board, the Memel lath, and the three coats of plaster still hold the field and keep their places in the construction of the Englishman's house. But signs are not wanting that in the future some more permanent sanitary and incombustible style of building will become universal.

It is well to distinguish between ordinary so-called fireproof floors and the more complete but more costly "fire-resisting" floor. The term "fireproof" has been rather loosely applied to various materials which are not subject to combustion by the direct application of heat. Cast- and wrought-iron and steel, for example, will not "burn," whereas timber will suffer complete destruction when exposed to the action of fire.

In the light of experience it is difficult for us to understand how it was that thirty or forty years ago engineers and architects endeavoured to make their structures fireproof by the use of non-inflammable materials, regardless of the probable effect of very high temperatures followed by the copious application of large volumes of cold water. A little consideration would apparently have shown that some of the materials employed

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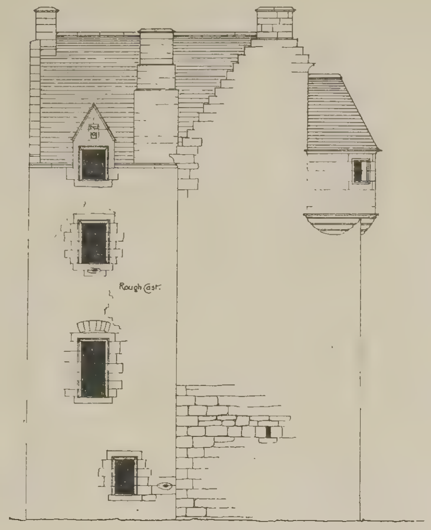
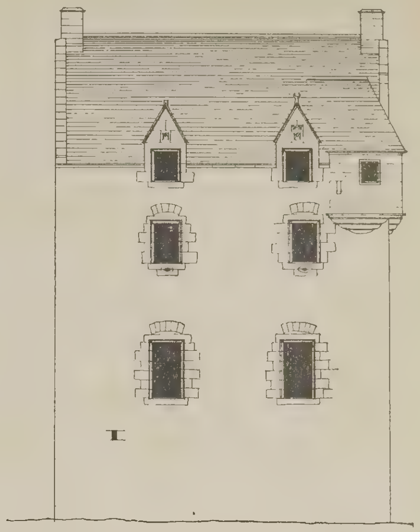
* A paper read before the Architectural Association of Ireland.



North Elevation



South Elevation

were singularly ill-adapted to resist the effects of such violent and rapid changes of temperature.

It was not till experience had proved that the buildings of so-called "fireproof" construction were perhaps even more liable to collapse under these influences than those built of combustible elements, that attempts were made to adopt such a combination of materials as would be able to remain intact after a lengthened exposure both to the action of fire and water.

The series of practical tests inaugurated by the British Fire Prevention Committee, followed by the publication of the results of these trials, have afforded a great deal of valuable information as to the real merits of the various materials and devices which are in use, or which the inventors have attempted to bring into use, to ensure security and stability in the presence of a conflagration. Architects above all other men should appreciate the benefits which are conferred upon them by such practical experiments. No member of the profession would desire to purchase his experience in fireproof construction bv taking up the position of Macaulay's New Zealander and gloomily surveying the ruins of a fabric which owed its origin to his pencil and its anatomy to his brain. Neither can we desire to obtain our information as to what to avoid by gloating over the misfortune of our less fortunate brothers and learning from their failures how best to escape the fate which has overtaken them. Let us then be thankful that there are other sources of knowledge open to us, and let us learn wisdom which is not embittered by the venom of uncharitableness or by the pangs of remorse.

The modern floor generally consists essentially of two distinct features, namely, the girders or joists which are said to constitute the element of support and the filling which occupies the intervening spaces, and which in many instances also surrounds the joists or girders themselves. As we shall have occasion to observe hereafter, the parts which are played by the girders and the filling are not quite the same as we should at first sight imagine, and when we come to consider the strength of a floor we must regard it as a whole, and we must not seek to look upon it as a series of beams or girders which merely serve to carry both the dead and the live loads which are to be supported. It is this consideration which has introduced a somewhat novel factor into modern floor construction as compared with the earlier systems.

Forty years ago floor girders, as they were called, were often constructed of cast-iron beams, which for practical purposes were inelastic, and which, whilst able to resist a comparatively high compressive strain, were only able to bear a very small tensile strain.

Such beams were always made with a very large lower flange and a very small upper flange in order to secure the sectional areas best calculated to carry the heaviest loads. These beams were massive, rigid and essentially independent of lateral support. Even the wrought-iron beams which succeeded them were invariably so designed as to combine a great deal of rigidity together with their ability to sustain both compressive and tensile strains.

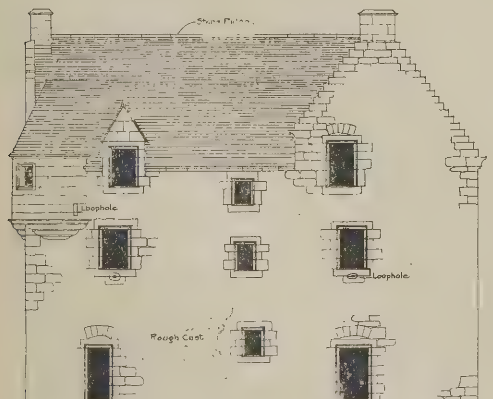
The introduction of Bessemer steel and the development of machine tools which are capable of turning out girders ready made from the rolling mills has revolutionized floor construction, and has compelled us to rearrange our ideas.

The modern steel joist with which we are all so familiar possesses not only very great powers of sustaining strains both of compression and tension, but it is essentially a highly elastic material which may be deflected to almost any extent without actual fracture, and which possesses the power of returning to its original form if the load be removed, provided the strains are not allowed to exceed certain well-defined and clearly ascertained limits. These characteristics have induced manufacturers to place on the market steel joists of very light scantlings, capable no doubt of carrying considerable loads owing to a judicious distribution of material, but incapable in some cases of sustaining even their own weights without deflection if the spans be very excessive and if the element of lateral support be absent. This will be more readily realized when it is remembered that the deflection varies as the cube of the span. So far indeed has this characteristic been utilized that in many modern floors comprised of steel joists it becomes a very intricate question to decide whether it is the girders which are carrying the floor or whether it is the floor which is sustaining the girders.

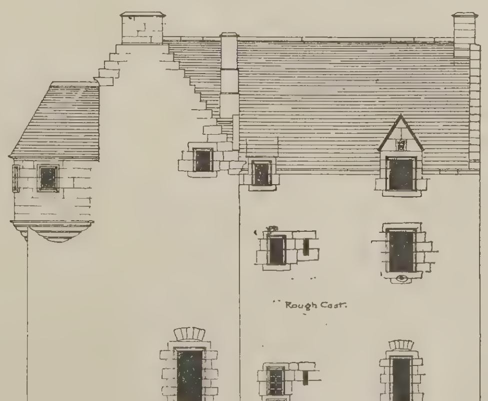
In this connection the results of some practical tests made in the presence of my partner on a series of steel joists are very instructive. A steel joist 7in. by $3\frac{3}{8}$in., with a bearing of 10ft. and a centre head of 8 tons, showed a deflection of 1in., but recovered itself when the weight was removed. The same joist with a load of $8\frac{1}{2}$ tons gave a deflection of $2\frac{1}{4}$in., but again recovered itself. When, however, the load was increased to 9 tons, the deflection was $3\frac{1}{4}$in., and the joist did not recover itself when the load was removed, but was found to have been given a permanent set of $2\frac{3}{4}$in.

Again, an 8in. by 5in. joist, with a 10ft. bearing and a centre load of 8 tons, showed no deflection. When the load was increased to $9\frac{1}{2}$ tons, the deflection was $\frac{1}{8}$in., but up to this load there was no permanent set. When the load was increased to 18 tons the joist acquired a permanent set of $\frac{3}{8}$in.

B



West Elevation



East Elevation

GILBERTFIELD CASTLE, LANARKSHIRE. MEASURED AND DRAWN BY J. JEFFREY WADDELL.

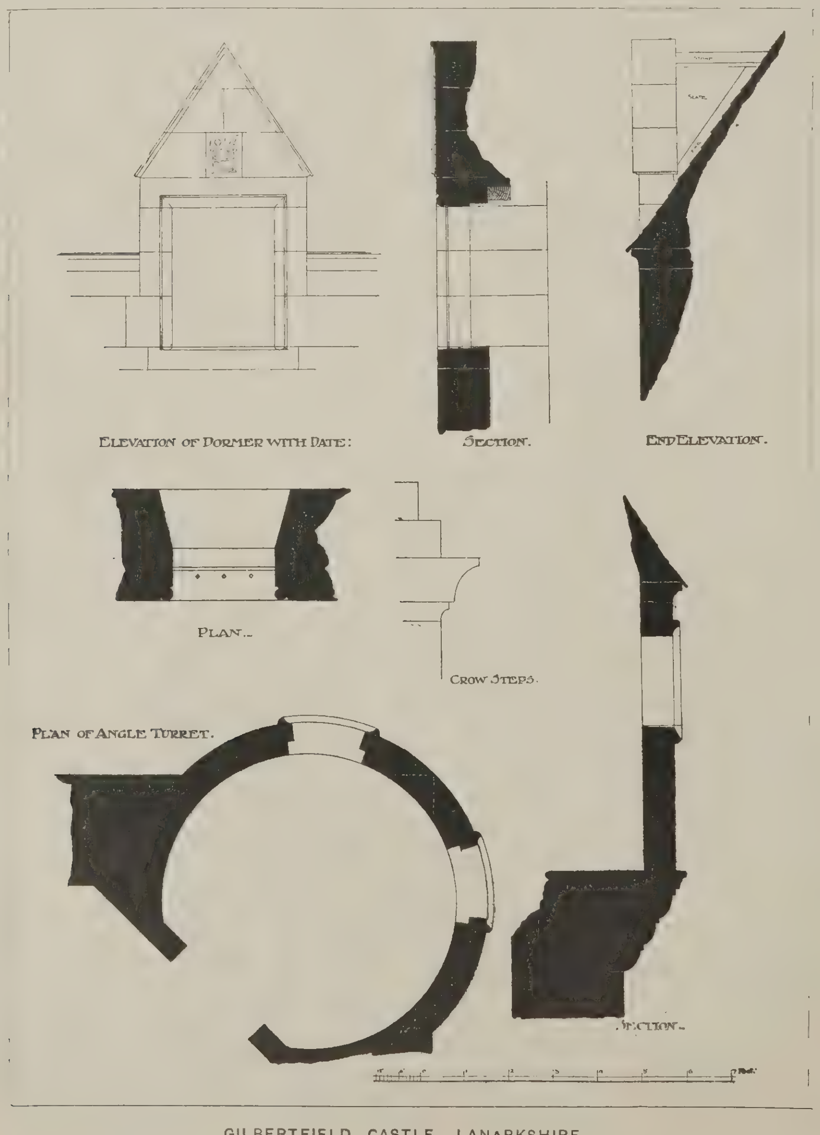
Again, an 8in by 6in. joist, with a 10ft. bearing and a load of 4 tons, showed no deflection; with 8 tons the deflection was $\frac{1}{4}$in.; with 12 tons $\frac{3}{8}$in., and up to this load there was no set: but when the load was increased to 16 tons the deflection was $\frac{1}{2}$in. and the joist showed a permanent set of $\frac{1}{8}$in With a load of 20 tons the deflection was 1in. and the set was $\frac{1}{2}$in.

In order to ascertain the quality of the steel of which these joists were composed pieces were cut out of them and tested for tensile strain. The average of ten experiments gave a tensile strain of 30 tons per sq. in. with an elongation of 25 per cent. According to the usual rules, the safe load should not exceed one-fourth of the breaking stress. Taking an 8in. by 6in. joist with a 10ft. bearing, the safe distributed load, according to the published tables of a well-known manufacturer, would be 15·4 tons or the safe centre load 7·7 tons; such a load would produce, as we have seen, a deflection of nearly $\frac{1}{4}$in. But it is also evident from the figures I have given that it would be practically impossible to load such a joist up to its breaking stress, because long before this point was reached the joist would fail by bending, that is to say, it would acquire such a permanent set as to make it useless.

Therefore in preparing specifications for steel joists it is unwise to refer to the breaking stress or to specify that a joist shall be able to sustain a certain specified breaking load. What is really required is that the maximum tensile strain which a given sample or series of samples must be able to bear should be defined together with the percentage of elongation which such a stress would produce.

In designing fireproof floors one of the most important points to be determined is the scantlings of the joists to be employed and the distances centre to centre. Modern practice inclines to the spacing of the girders at very short intervals, say, 18in. to 24in. This method may be advantageous with very small spans, but with any considerable span it involves either extravagance or insecurity. For the reasons which have already been given it is necessary, in order to secure adequate rigidity and to guard against deflection, that the relation between the span and the depth of the joist should have some minimum ratio. According to some of the best authorities the depth of a steel joist should not be less than one-twentieth of the span, and due allowance must be made for all holes drilled in the joists, especially if they be in the flanges. This ratio is not necessarily dependent on the load to be supported, but relates mainly to the span. It is evident, therefore, that as the girders must be of considerable weight to secure this proportion, and as girders of such scantlings are capable of carrying very substantial loads, it is not economical to place them very close together. On the contrary, the object should be to space them as widely apart as possible consistent with keeping the load within the factor of safety.

This factor of safety must depend upon the nature of the load to be carried. For permanent dead loads not liable to variation a factor of 3 is sufficient, if the steel will bear a tensile strain of 30 tons per sq. in., with a moderate elongation, say, 20 per cent. in a maximinum length of 8in. Then the maximum safe load not liable to variation would involve a tensile strain of 10 tons per sq. in. For ordinary live loads applied gradually the factor of safety should be 4, and the safe load would produce a strain of $7\frac{1}{2}$ tons per sq. in. For live loads rapidly applied the factor should be 5, and the maximum strain should not exceed 6 tons per sq. in.



GILBERTFIELD CASTLE, LANARKSHIRE.

If these were the only considerations which influenced the design, it would be easy to arrive at the most economical intervals at which the joists should be placed. But other circumstances must be taken into account. If the floor is to be a real fire-resisting floor the girders must be completely encased in the fire-resisting material. Firstly, this may be accomplished in four different ways. The depth from ceiling to floor may be increased sufficiently to allow the fire-resisting material to be deep enough to encase and protect the joists without allowing the casing of the girders to come below the general ceiling line. Secondly, the fire-resisting material may be "haunched up" on the joists whilst they are encased in the same material, the casing being allowed to show below the general ceiling line. Thirdly, the ceiling may be suspended from the lower flanges of the steel joists, an air-space being thus secured between the floor and the ceiling, whilst a continuous ceiling can thus be obtained without allowing the joists to come below the general ceiling line. Fourthly, the general ceiling line can be left level, but the filling can be kept below the level of the top flanges of the joists; light battens or wood joists can be placed on the fire-resisting material between the top flanges of the girders of sufficient depth to allow the flooring boards to be carried over the top flanges of the steel joists.

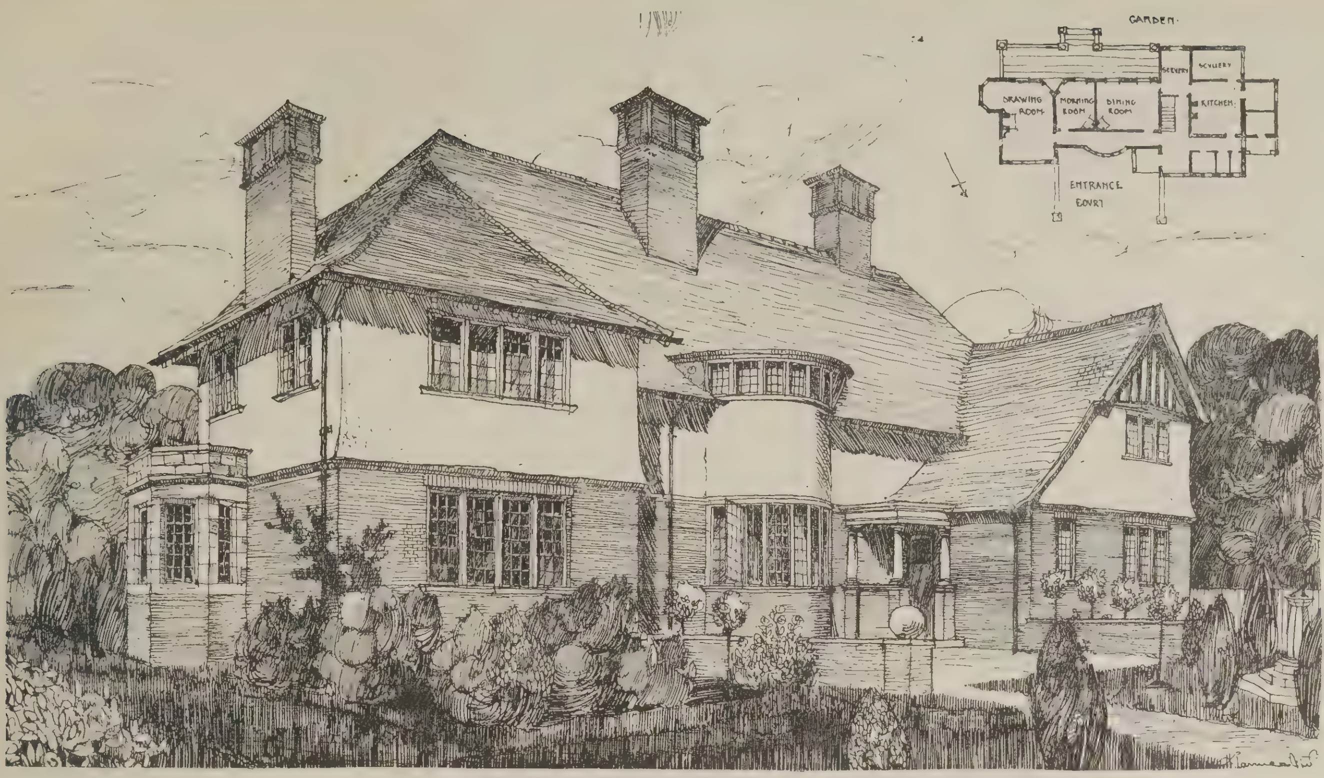
There are obvious objections to all these arrangements.

The objection to the first alternative, namely, to make the fire-resisting material of sufficient thickness to encase the steel joists, when the spans are considerable involves a great thickness and a great weight of material which imposes a considerable load upon the girders and walls. Suppose, for example, that the span is 20ft., the depth of the steel joists should be 12in., and the total depth of the fire-resisting material should be at least 15in. to adequately protect the joists. Suppose the joists are spaced 4ft. apart, and suppose the fire-resisting material to be ordinary cement-concrete weighing 120lbs. per ft.—the distributed weight on each girder arising from the fire-resisting material would amount to 5·35 tons. If the joists were 12in. by 6in., weighing 50lbs. per ft., the total safe distributed load with a factor of safety of 5 would be 13 tons, out of which nearly half would be represented by the weight of the fire-resisting material alone.

It is needless to add that the cost of such a floor would be very considerable, but it is also necessary to point out that as breeze-concrete only weighs about 90 to 95lbs. per cub. ft. this latter material can often be advantageously substituted for ordinary cement-concrete.

The objection to the second alternative is even more obvious; it is very difficult to treat architecturally a series of cased-in joists spaced only 4ft. apart and crossing the ceilings of the rooms in parallel lines.

The third alternative, namely, the level suspended ceiling hung below the deep steel joists, is the best arrangement of all those which have been described, but in a building of many floors it makes an appreciable addition to the total height and consequently to the total cost. The suspended ceiling is also more costly than the other alternatives



HOUSE AT BECKENHAM. HENRY TANNER, JR., ARCHITECT. *(See next page.)*

which provide for plastering the soffit of the floor itself.

The fourth alternative, namely, the provision of sleeper joists or battens set on the concrete or other fire-resisting material, does not afford complete protection to the joists and at once introduces the element of the hollow floor with all its attendant insanitary consequences.

It is the difficulty of reconciling these requirements with the economy which must be the determining factor in the construction of a certain class of modern structures, such as artizans' dwellings and cheap flats, that has led architects to "rush in" where engineers "fear to tread."

Many modern floors are constructed with steel joists the depth of which is far less than one-twentieth of the span, and which must deflect to an appreciable extent even with the load of the fire-resisting material itself. The practice is to keep up the centering until the concrete has set hard, and then to trust to the lateral support afforded by the filling to prevent the steel joists being deflected, as they must otherwise certainly be deflected, by the weight of the material which forms the floor. The whole floor thus becomes a kind of reinforced concrete floor, and if the live loads placed on it are not great it may manage to hold together.

But instances are not wanting in which these aberrations of the stars of the profession from the fundamental fixed laws of statics have brought their own punishment. Ominous cracks crossing all the ceilings at intervals corresponding with the spacing of the joists can be seen in some modern buildings, clearly showing that the steel joists have deflected under the loads, and in doing so have cracked the thin shell of "fire-resisting" material with which their lower flanges were covered.

In constructing floors such as those just described for flats and similar buildings it is usual sometimes to assume that the combined dead and live load will not exceed 1 cwt. per sq. ft. Out of this it is calculated that the weight of the floor itself will amount to $\frac{5}{8}$ cwt. per ft. super., leaving a margin of $\frac{3}{8}$ cwt. per ft. super. for live load. Such a floor would be manifestly dangerously overloaded by a densely packed crowd of human beings. In floors of this character with 16ft. spans the joists are often not more than 5in. deep, a figure which is, of course, very much under the recognized ratio already given.

To keep within safe limits, it is not wise to assume that for dwellings or office buildings the combined dead and live load will be less than about 154lbs. per ft. The average dead load of a fireproof floor made of steel joists and 6in. of coke breeze-concrete for moderate spans may be taken as 70lbs. per ft., and the live load may be put down at 84lbs., giving a total load of 154lbs. In public buildings or in schools where large numbers of persons may congregate, or in warehouses where heavy loads are stored, the total loads to be provided for will be much greater. The following figures are given by one well-known firm, and appear to be reasonable:—

*Total Loads.*

| | Lbs. per ft. |
|---|---|
| Dwellings or office buildings - | 150 |
| Public hall or schools - - | 180 |
| Warehouses - - | 200 to 400 |
| Heavy machinery - - | 300 to 500 |

These considerations have led manufacturers to consider the possibility of adding to the strength of the floors by reinforcing them with steel in some other form.

One well-known firm has informed me that they have recently constructed some floors composed of broken brick 3 parts, crushed finely in a machine, 1 part sharp sand and 1 part Portland cement 6in. thick, with 2in. by 2in. tees placed 1ft. apart, which are locked into triangular holes punched into the steel joists, which are spaced 10ft. apart. A floor of this character is said to be able to safely carry 3 cwt. per sq. ft.

The same firm have made a floor of the same character, 10ft. span, $4\frac{1}{2}$in. thick, concrete same as before, with the same tees placed 18in. apart. This floor was tested and broke at $7\frac{1}{2}$ cwt. per ft. super. The concrete in the middle of the bay crushed into powder before it broke, the tees only bending under the load.

Terra-cotta is often used for fire-resisting purposes, and blocks of this material are so arranged as to completely encase the steel girders. One advantage of terra-cotta is its lightness, as the blocks are of course made hollow. Another merit of this type of floor is that it is more sound-proof than the solid concrete floors. The latter are not impervious to sound, and in some cases this objection offers a serious obstacle to their use.

There are very many ways in which the strength of concrete can be reinforced by embedding in it either steel or iron in some form or other, this material being so placed as to assist to bear the tensile stress which the concrete without reinforcement would be unable to sustain.

One of these systems has already been mentioned. Another arrangement consists of a number of steel rods so placed in the lower strata of the concrete as to materially add to its strength. In this connection the expanded metal recently placed on the market offers a very valuable means of adding to the strength of a floor. If sheets of this metal are bedded in the concrete about 1in. from the bottom, and if the concrete is thoroughly worked into the meshes of the metal, a floor of great strength is the result. The expanded metal cannot stretch without crushing the concrete in which it is embedded, and the very great power which good concrete undoubtedly possesses to resist compressive strains is thus fully utilized.

Not so long ago a test was made of a floor of this character with interesting results. A slab of concrete 12ft. 6in. by 11ft. clear span was constructed; it was 5in. thick, composed of 4 parts of fine clinker and 1 part Portland cement. The expanded metal was 3in. mesh, with $\frac{1}{2}$in. by $\frac{3}{16}$in. strands, and was in four sheets, which were laid on the temporary centering with 12in. lap, and the meshes overlapping were clipped together with steel clips. The metal was completely hidden in the concrete. The slab was allowed to stand for seven weeks, and was supported on a 3in. bearer all round.

The test was begun on May 22nd, 1900. At $1\frac{1}{4}$ cwt. per ft. there was a deflection of $\frac{1}{4}$in. in the centre, at 2 cwt. the deflection increased to ½in., at 3 cwt. the deflection was $\frac{15}{16}$in., at 3½ cwt. a slight crack was noticed. At last, when the load was increased to 5½ cwt. per ft. super., the slab collapsed after carrying this load for 1½ hours.

It is stated that the Expanded Metal Co. have recently made a test of a specimen slab of expanded metal armoured-concrete, 7in. thick, 15ft. by 15ft. clear span, supported all round. It is stated that the slab carried a load of 3 cwt. to the sq. ft. from November 12th, 1902, and that the test was completed to breaking point on January 20th, 1903.

It is not my intention to describe and illustrate in detail all the various types of fire resisting floors on the market. An admirable and very concise account of the leading patterns will be found in a short paper by Mr. Frederick R. Farrow, F.R.I.B.A., being No. 7 of the publications of the British Fire Prevention Committee. The paper does not give the results of any experiments upon the various floors to test their relative effectiveness to resist fire, although this is of material assistance in enabling an architect to form an opinion as to their apparent efficiency.

Publication No. 14 of the same Committee gives the result of a very interesting experiment with a floor constructed by the Expanded Metal Co. which cannot be passed over without notice. The area of the floor which was tested was 100 sq. ft. The floor consisted of rolled steel joists spaced 4ft. 9½in. centre to centre; the joists were 6in. by 3in., weighing 14lbs. per ft. Timber centering was erected between the joists and expanded metal, 3in. mesh, was laid upon the centering resting, on it and on the upper flanges of the joists. On this 3in. of breeze-concrete was laid, on this was laid a layer of equal parts of cement and sand ½in. thick. The ceiling was suspended from the joists by ⅞in. by ¼in. iron bars hung by clips from the steel joists. The expanded metal lathing was secured to these bars by suitable clips. The ceiling was plastered with one coat of well-haired stuff, ½in. thick, gauged 1 of lime to 2 of sand. The floor was allowed to stand for seventy days before the heat was applied. The temperature was steadily raised by means of gas until the heat reached 2,400 degs. Fahr., and during the last quarter of an hour a jet of water was played upon the ceiling. The result of the test was as follows:—(1) The plaster ceiling remained intact until the water was applied. (2) There was a slight deflection of both floor and ceiling. (3) The concrete of the floor was slightly and superficially cracked. (4) The fire did not pass through the floor. It should have been mentioned that during the test the floor was loaded with pig-iron, so as to give an evenly distributed weight of 140lbs. per sq. ft. The whole of the tests were carried out under the personal supervision of a specially selected committee of independent experts, including a number of well-known Fellows of the Royal Institute of British Architects.

How other fire-resisting floors would have withstood a similar test we do not yet know, but so far as this particular method of construction is concerned the foregoing result must be considered satisfactory.

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**The House at Beckenham** illustrated on the preceding page was to have been one of several of a similar type erected to develop an estate, which has not been so utilized. The materials were to have been red brick with vitrified headers, rough-cast on the upper floor, with tiled roof. External woodwork, including moulding between rough-cast and brickwork, to be oak. The paving to terrace to be large quarries, and also copings to dwarf wall. The drawing was exhibited at this year's Academy.

# Bricks and Mortar.

**Aphorism for the Week.**

*The function of every art is to employ the actual in the realization of the ideal.*—BASIL CHAMPNEYS.

**Our Plates.** THE drawings of Nether Swell Manor, Gloucestershire (by Mr. Geoffry Lucas), were exhibited at this year's Academy. The house is being built for Sir John Murray Scott, local stone being used throughout. The site is on a slope facing south. In addition to the house, an entrance lodge, stables and home farm are being erected, and the terraces and gardens laid out. Mr. E. Guy Dawber, of 22, Buckingham Street, Strand, is the architect, and Messrs. Heyward & Wooster, of Bath, are the builders.

**The British Museum Extension.** As stated in our issue for last week, a new wing is to be added to the British Museum at a cost of £200,000. This addition is part of a general scheme which will ultimately see the British Museum covering the whole area bounded by Great Russell Street, Montague Street, Montague Place and Bedford Square. The ground forming this block, and not already occupied by the Museum buildings, was acquired some time ago from the Duke of Bedford. The new plans, prepared by Mr. Henry Tanner, architect of the Office of Works, concern the frontage towards Montague Place, or the northern side of the Museum. Here a block 380ft. long will be erected. This length does not cover the whole frontage towards Montague Place. Corner wings, as they may be called, like the White Wing which was built twenty years ago to the south-east of the main building, will some day be added. The design of the new block is in harmony with the general scheme of the Museum. In the middle there will be a portico having Ionic columns. The new building will be five storeys high. There will be a basement devoted to storage, and then a sub-ground floor, which will be utilized for storage and also as receiving and packing-rooms. Next will come a ground floor of spacious galleries, and over it a mezzanine floor with a variety of rooms for general purposes and the use of students. Lastly, there will be an upper floor, which will consist of galleries and further working space for students. Altogether the new northern block will be an enlargement which is much needed at the Museum. A building has just been begun at Hendon for the housing of some of the accumulated newspaper files.

**Victoria Hall, Sunderland.** THE Victoria Hall at Sunderland is about to undergo extensive remodelling and enlargement. The building was never completed as originally designed, and it is only now that it has been taken over by the Corporation so that it may be brought thoroughly up to date and conducted as a municipal concern. Practically the whole of the northernmost half of the block, including a tower, is to be added. The alterations to the existing hall comprise a new platform end, separate entrances to the ground floor, dress circle and gallery, and cloak-, retiring- and smoke-rooms to each floor. The present gallery stairs are to be done away with, and two entirely new staircases built in their places, so that under the new scheme the pit, dress circle and gallery will each have two exits absolutely independent of the exit from any other part of the hall. The new block at the north end will contain retiring-rooms, the kitchen department for the banqueting room, &c. An octagonal tower at this end will contain the emergency stair for the banqueting hall and small hall. On the ground floor will be the large banqueting hall, 54ft. by 33ft., in which 220 persons will easily find seating room. The first floor will be taken up entirely by a small hall, which, with the gallery, will seat 700. Externally the buildings will be of red bricks with stone dressings. The architect is Mr. John Eltringham, of Sunderland, who was successful in winning the premium offered by the Town Council.

**Blairs College, Aberdeen.** THE building work in connection with the extensive additions to Blairs College, Aberdeen, has now been completed; by next month all the internal arrangements will have been finished and the college will then be opened. The new buildings complete three sides of a square, being connected at the south-west end with the old establishment. The extensions have been carried out at a cost of over £33,000. A striking feature of the new building, designed by Mr. R. G. Wilson, of Aberdeen, is the high square tower on the north front, surmounted by four turrets, while above the central crown dome is the representation of a golden mitre, which gives character to the whole pile. The college is built of grey granite. Mr. James King, of Aberdeen, was the builder.

**Modern Houses.** A WRITER in the "Yorkshire Post" observes that it is a curious fact, and one which emphasizes all the rest, that the most artistic of modern houses are those of the very wealthy and the very poor. The rich are building their own; the poor, in a few favoured places, are having theirs built for them, and in their different ways they are the nearest approach we have to model homes. Between these extremes comes the great wilful and inartistic middle-class, for whom there is being provided on all hands architecture which would be laughable were it not so sad. Scores of examples of it may be seen in the suburbs of any growing town—painfully modern villas of every possible degree of ugliness and inadaptability. In general they are supposed to be imitations of various "styles" of architecture, but here and there may be found a case of absolutely original eccentricity.

**A Garden City at the New Naval Base.** IT is suggested that a garden city might be built around Rosyth, the new naval base on the Firth of Forth. The Government have bought 1,600 acres of land, of which a considerable area will be needed for naval works: but the Garden City Association would like to participate in the land not required, and, further, would desire the neighbouring landowners to work with a company that might be formed, so that the whole place could be laid out on a predetermined plan. Dunfermline is only three miles from Rosyth. It is a town of over 30,000 inhabitants, and the population of Inverkeithing and Rosyth brings up the total to nearly 40,000. It is estimated that in a few years the naval base will attract 30,000 more people to the district, so that in a quarter of a century we may expect a population, including Dunfermline, of 100,000 inhabitants. In reply to a question asked in the House of Commons last Thursday, Mr. Arnold-Foster said that until the areas required for all prospective naval establishments at Rosyth had been allotted, it was not possible to say definitely whether any property would be available for feuing, or to determine how any building sites could best be dealt with. But the suggestion of a garden city is noted for future consideration. It is opportune to state that the Garden City Pioneer Co. has bought 4,000 acres of land at no great distance from London, and here the first English experiment will be made. A company will be floated with a large capital to complete the purchase of the estate.

# MODERN LONDON BUILDINGS.

(*Continued from* p. 10, *No.* 443.)

*A list of public and semi-public buildings in the E.C. district was published in our issue for March 25th, of domestic and religious buildings, colleges and schools in the same district in the issue for April 1st, of business premises in the same district in the issues for April 15th, April 29th and May 13th, and of hotels, restaurants, &c., in the same district in the issue for May 13th. A list of public and semi-public buildings in the E. district was published in our issues for June 3rd and August 5th, of religious buildings, colleges and schools in the same district in the issue for July 8th, and of business premises, domestic buildings, hotels, restaurants and public-houses in the same district in our issue for August 5th.*

## S.E. DISTRICT: PUBLIC AND SEMI-PUBLIC BUILDINGS (*concluded from p. 10, No. 443*).

| BUILDING. | ARCHITECT. | APPROXIMATE COST. | REMARKS. |
|---|---|---|---|
| **1897.**<br>Passmore Edwards Public Library, Woodward Road, Lordship Lane. | Charles Barry & Co | £<br>5,834 | The building is of red brickwork with Bath stone dressings and moulded brick strings and cornices. The floors are of fireproof construction. |
| **1898.**<br>Christ Church Public Library, Blackfriars Road. | A. W. Tribe | — | The building comprises a general reading-room, ladies' reading-room and lending library. |
| Crown Theatre, Peckham | Ernest Runtz | — | The exterior is designed in the Spanish Renaissance style, the materials used being red bricks with terra-cotta of a lighter tint. The first tier is equipped not only with a saloon, but also a foyer, treated in a modern phase of Italian Renaissance and containing a small fountain. There are two tiers, both of considerable depth, supported by cantilevers. The proscenium, which is surrounded by boxes, shows a plain marble framing. The auditorium is 62ft. in width by 52ft. in depth, and 48ft. in height to the ceiling. The stage stretches 120ft. in extreme width, and 40ft. in depth, behind which are seventeen dressing-rooms and a scene-painting room. |
| Fire-Brigade Station (on site of old Lewisham House), Lewisham. | Thomas Blashill | — | There are twelve different sets of married men's quarters, to accommodate one engineer, nine firemen and two coachmen, with two spare sets. The quarters consist of kitchen, bedroom, scullery. There is stabling for four horses. |
| The Horniman Museum, Dulwich. | C. Harrison Townsend | — | The building consists of two galleries each about 100ft. long and top lighted. In addition, there is a lecture hall for 300 persons. The museum, including the administrative block, is about 300ft. long, its front being constructed of stone, with a clock tower more than 100ft. high. |
| Lunatic Wards, Lewisham Infirmary. | Robert Williams | — | The lunatic pavilion is a one-storeyed building, of red brick and Doulting stone, arranged to accommodate male and female patients. On entering, the large male ward is on the left, and is built to hold eight beds, while the female ward, of similar capacity, is on the right. Between the two wards are two padded rooms. At the end of the main nurses' ward, a ward kitchen and attendant's room are placed. |
| Public Baths and Wash-houses, Manor Place, Walworth. | E. I'Anson & Sons | 33,000 | The building has a frontage of 284ft. The centre portion is three storeys high, having a high pitched roof surmounted by a domical turret. The public laundry and ladies' swimming bath are at the extreme ends of the frontage. Renaissance, freely treated, is the style adopted. The front is executed in red brickwork with terra-cotta embellishments. The men's first-class swimming-bath has a water area of 120ft. by 40ft., designed to contain 157,000 gals. A refreshment bar and a room for the use of clubs are also provided. There is also a men's second-class bath, 144ft. long by 35ft. wide. |
| Public Baths and Wash-houses, New Cross Road, Deptford. | Thomas Dinwiddy | 32,950 | The front elevation of the building is of red brick and Portland stone, and the roofs are covered with Welsh Rag slating. The first-class swimming-bath is 110ft. by 35ft., and the second-class bath 80ft. by 27ft. Sixty slipper baths are provided. There is a board-room 26ft. by 18ft., with superintendent's living room above; also a large laundry for public use. |
| Public Institute for the trustees of the Charities of St. Olave and St. John, junction of Tooley Street and Fair Street. | Henry Stock | — | The materials used are blue pennant stone for the plinth and basement windows, red brick facings and Monk's Park stone for the upper windows, cornices and copings. The building comprises:—In the basement a gymnasium and book store; club smoking-room; men's cloak-room and lavatory, and the boiler-room. On the ground floor—the principal entrance hall to Fair Street, giving access to the billiard-room and club-room, and a tea and coffee bar. On the first floor is the large hall, which will seat 300 persons, with retiring rooms. The caretaker's apartments are on the ground floor, adjoining which is the library. |
| St. Olave's Union Offices, Tooley Street. | Newman & Newman | 20,000 | Upon the ground floor are provided the general and registrar's private offices, also offices for the general relieving officer and collector, with porter's box and the necessary waiting rooms. Upon the first floor are the clerk's general office, committee room, and the board-room, 50ft. by 30ft. The second floor forms a store, and the basement contains the strong room. At the back is the relief station, containing dispensary, consulting rooms, caretaker's apartments, &c. |
| Sub-divisional Police Station, Church Street, Camberwell. | J. Dixon Butler | — | The inspector's room and criminal investigation department occupy the front portion of the ground floor, with the charge-room adjoining. Leading directly from the latter are two corridors communicating with the cells for the male and female prisoners. The section house provides accommodation for twenty-four single men. In the basement are boot rooms, drying rooms, &c. On the ground floor are kitchen, scullery, library, mess and day rooms, with a stone staircase leading up to the dormitories. |
| **1899.**<br>Camberwell Theatre of Varieties, Denmark Hill. | Woodrow | 25,000 | The auditorium is 62ft. wide and 76ft. 6in. deep, with a proscenium opening of 30ft. and a stage 28ft. deep. The building accommodates an audience of 3,000 people. The decorations of the interior are of Moorish design, and all the seats are upholstered in red plush, except those in the gallery. The balconies are on the cantilever principle, all columns being thus avoided. |
| Empire Theatre of Varieties, New Cross. | Frank Matcham | — | The material used on the main front is Leicester red brick, with brown-coloured cement dressings. The building will seat about 3,000 people. The tiers are constructed on the cantilever principle, there being no pillars to obstruct the view of the stage, which measures 40ft. by 36ft. The entrance vestibule has a double staircase of white marble, with the pay offices between under a minaret The decorations are carried out in the Louis XIV. style. |
| North Camberwell Radical Club and Institute, Albany Road, Camberwell. | A. J. Perriam | 7,000 | The ground floor has a large billiard-room for four tables, with bagatelle-room adjoining, also large bar, smoking-, reading-, waiting- and dressing-rooms, and gentlemen's lavatory. On the first floor is a large hall to hold 700 persons, with a stage, property-room, &c., also serving-bar, conference and committee rooms, secretary's office and ladies' lavatories. On the second floor are committee and chess rooms, kitchen and accommodation for manager. The front is faced with red bricks and stone dressings. The entrances, staircases and buildings in the rear are of fireproof construction. |
| Passmore Edwards Public Library, Borough Road. | A. Blomfield Jackson | — | The basement extends over the whole area of the building, and contains cellarage and heating chamber, the rest of the space being available for the storage of books, &c. On the ground floor are a ladies' room, newsroom, lending library and boys' room. On the first floor is the reference library and magazine room, with book-store attached. A committee room adjoins the reference library. There is a separate entrance for the librarian's staff, and this entrance leads to the librarian's residence. The exterior facings of the walls are of red brick with terra-cotta dressings, the roof being covered with slates. |
| St. John's Hospital, Lewisham (additions) | Barnes-Williams, Ford & Griffin | 5,370 | The additional buildings, which provide for the reception of thirty-three additional patients, are of red brick, with Monk's Park stone dressings and tiled roofs. |
| Workhouse for the Greenwich Union Guardians, Grove Park, Greenwich. | Thomas Dinwiddy | 175,020 | The site consists of about 9½ acres of land with a 600ft frontage to Marvel's Lane. The administrative block is centrally placed, and is connected with the nine pavilions and the chapel by open arched corridors There is dormitory and day-room accommodation for 262 aged males in three pavilions, for 178 aged females in two, for 200 able-bodied males in two, and 100 able-bodied females in a further pavilion. There is also on the female side a block for twelve married couples. Two small isolation wards are provided in a remote corner. The chapel, to seat 400, is situated at the rear of the administrative block. Flour stores are placed in the water tower, which is surmounted by a 20,000-gallon tank. Establishment and labour shops, with hand corn mills and a stoneyard, are situated near the able-bodied quarter, whilst smaller shops are provided for the aged. A mortuary and stable accommodation complete the scheme. The buildings are faced with red pressed bricks, with a spare use of Portland stone, and are covered with Welsh Rag slating. Internally glazed facings are used to the dining halls kitchen, larders, stores &c., and throughout the laundry block. |
| **1900.**<br>Camberwell Municipal Depôt, Grove Vale, East Dulwich. | W. Oxtoby, Surveyor to the Vestry | 28,000 | The site is 1¾ acres in extent, the buildings being erected in blocks. One block contains stabling for eighty-eight horses, with a veterinary-surgeon's room. Other blocks contain the smiths', farriers' and wheelwrights' shops, while there is a shed for eighty-four carts. There is a steam-roller shed and a yard for storing materials. On the south side of the site a committee room and general offices are erected. The building is of stock brickwork, with blue Staffordshire brick plinths, but some cottages, erected at the main entrance, are faced with red Fareham bricks with stone dressings. |
| Central Public Libraries, Lewisham and Forest Hill. | A. R. Hennell | Lewisham Library, 8,000 | The Lewisham library is erected on a site in the High Street. The building has a frontage of over 100ft. to the main road. The rooms are approached from a central hall, and have open-timbered roofs with lantern lights. They comprise lending library, newspaper room, reference library and magazine room with office for the librarian. The building is Renaissance in style, in red brick and terra-cotta. At Forest Hill the public rooms, which are similar to those at Lewisham, are placed on either side of a central corridor, and separated from it by glass screens. There is a tower over the entrance and a moulded frieze, with figures and flowers running round the adjoining gable. The building is of red brick and terra-cotta. |
| **1901.**<br>Fire Station, Forest Hill - | W. E Riley, architect to the L.C.C. | 11,900 | |

## S.E. DISTRICT: PUBLIC AND SEMI-PUBLIC BUILDINGS—*cont.*

| Building. | Architect. | Approximate Cost. | Remarks. |
|---|---|---|---|
| **1901.**—*cont.* | | £ | |
| Infirmary, Brunswick Square, Camberwell. | Edwin T. Hall | 174,000 | The building will contain 800 beds, of which 712 are for adults and eighty-eight for children, the latter being accommodated in a separate block. The infirmary consists of twenty buildings. The administrative block contains the offices and committee room; at the north end the residence of the medical superintendent, and at the south that of the sisters and nurses. The nurses' and servants' home is in the centre quadrangle. The pavilions next Brunswick Square are three storeys high, except near the administrative block. where they are four storeys high. The eastern blocks are all four storeys high. Each floor contains from twenty-four to thirty beds, with a day-room and balcony the full length of the main ward. The kitchen, which measures 60ft. by 30ft., has a dining-room for the servants and all necessary offices attached to it There are also laundries, bath-house, engine-room, disinfecting house, ambulance, stables, mortuary, &c. All the buildings are of fireproof construction |
| Passmore Edwards Public Library and St. George's Public Baths and Wash-houses, Wells Street and Neate Street, Camberwell. | Maurice B. Adams and William Oxtoby. | 19,000 | The library contains a newsroom reference-room, vestibule with borrowers' counter, and a lending library to the rear. The baths include fifty slipper-baths, the women's being on the first floor. The washhouse accommodates thirty washers, and to the front are the mangling-room and bonnet-room. The basement contains the establishment laundry. The elevations are in red brickwork, the dressings being of Portland and Hopton Wood stones, and the roofs are covered with Broseley tiles. The entrance to the baths is of Norwegian granite. |
| St. John's Institute, Larcom Street, Walworth. | Dunn & Watson | — | The building contains four floors and a basement. The basement contains stores and heating chamber. On the ground floor are men's gymnasium, boys' gymnasium and boys' reading-room, with an entrance-hall and fireplace. On the mezzanine floor is the gallery to the large gymnasium, used as a dressing room. The first floor contains a meeting-room, reading- and writing-room and a large billiard room. On the second floor are twelve cubicles 10ft. long by 5ft. wide, for resident members, dining-room, bathrooms and store- and box-rooms. The kitchen and caretaker's apartments are placed in the attics. The building has a frontage of 66ft. to Larcom Street, and the front wall is faced with salt-glazed bricks of a warm colour, up to the gymnasium windows, over which are projecting balconies, from the billiard-room floor above. Above this the walls are faced with yellow stocks with stone dressings. |
| **1902.** | | | |
| Henriette Raphael Nurses' Home, Guy's Hospital. | Woodd & Ainslie | — | The building is treated externally in red brick and Portland stone. It is T-shape on plan and contains 213 bedrooms, a sick-ward and convalescent-room, dining-hall, sitting- and living-rooms, visitors' room, servants' rooms, offices and kitchens. Lavatory and bathroom accommodation is provided on each floor, whilst the basement contains a swimming-bath with boxes, &c. The construction throughout is fireproof. |
| New Buildings for the Lambeth Board of Guardians. In course of erection. | Sidney R. J. Smith | 54,000 | The buildings at present in course of construction are: New porter's lodge relief station, nurses' home and offices for the Guardians, including the reconstruction of the existing buildings to give greater ward accommodation in the infirmary. The following accommodation is afforded: In basement muniment room, stores and heating chamber, &c. Ground floor—clerks' public office, clerks' private office and large central office, accountants', settlement officers', call-over staff's, collectors', superintendent's, relieving officers', lunacy and warrant officers' offices, lady guardians' room public waiting-room, two large committee-rooms, private waiting-room, lavatories, boardroom, 50ft. by 30ft. The nurses' home contains—kitchen, scullery, dining-room, visiting-room, lavatories, cloak-room and cycle shed. On the upper floors are three matrons' rooms, charge-nurses' room, two assistant matrons' rooms, nurses' sitting and recreation room, with lecture-room, box-room, lavatories and bathrooms, and bedrooms for 101 nurses and servants. Externally the building will be faced with red bricks and stone dressings, with granite columns at the entrance, the walls being of Fletton bricks in cement. |
| Newington Workhouse (New Wing). | G. D. Stevenson | — | |

## S.E. DISTRICT: RELIGIOUS BUILDINGS.

| | | | |
|---|---|---|---|
| **1876.** | | | |
| Catholic Apostolic Church, Camberwell New Road. | J. & J. Belcher | 8,000 | The church is in the Early English style, in red brick with stone dressings. There are nave, apsidal chancel 40ft. deep, aisles and transepts, the south transept forming a chapel, with a vaulted ceiling elaborately decorated. |
| Chapel, Greenwich Workhouse. | F. Wallen | 2,250 | The church holds 400 persons. It is Gothic in style and is executed in yellow brickwork, with red bands and Bath stone dressings. |
| Christian Workers' Mission Hall, Camberwell. | - - - - | 1,000 | The hall measures 140ft. in length by 62ft. in width, and will seat 1,500 people. |
| Congregational Church, Anerley. | Elkington & Son | 12,500 | The church is 130ft. in length. It is of red brickwork, with white Suffolk and Bath stone dressings. The style is Romanesque |
| St. Andrew's Church, New Kent Road, Newington. | Newman & Billing | 4,800 | The style adopted for the church was Early French. The nave is 80ft. long by 28ft. wide. and the chancel 28ft. by 23ft. The height of the nave is 37ft. to the plate. The nave roof is of open-timber and the chancel roof of barrel-vault construction. The accommodation is for 776 persons. The facings are of stock brickwork internally, and red brick with stone bands and tracery externally. |
| St. Emmanuel's Church, West Dulwich. | - - - - | 9,000 | |
| St. Jude's Church, Peckham. | A. Blomfield | 5 300 | The style adopted for the church was Norman. It is carried out in white brickwork, with red brick bands and Bath stone dressings. Internally it measures 120ft. by 50ft., and accommodates 760 persons. |
| St. Luke's Church, Rosemary Road, Camberwell. | J. E. K. Cutts | 7,932 | The church holds 1,000 persons. It was erected to the memory of Canon Wilberforce. The style is mixed Gothic and the materials red brick and Bath stone. The internal dimensions are 120ft. by 60ft. |
| **1877.** | | | |
| Baptist Chapel, Chatsworth Road, Lower Norwood. | Power & Wheeler | — | The style of the church is Gothic, and the accommodation is for 650 persons on the ground floor and an additional 350 in galleries. |
| Maze Pond Baptist Chapel, Old Kent Road. | Finch Hill | — | The chapel is in the Gothic style. |
| Presbyterian Church of St. Andrew, Western Street, Upper Norwood. | Power & Wheeler | 6 900 | The materials used in the construction of the church were, Kentish Rag stone for the general walling, with dressings of Bath stone, and the nave and aisle columns of granite on Portland-stone bases. There is a north-west tower with spire, rising to a height of 120ft., and seating accommodation is provided for 780 people. |
| **1878.** | | | |
| Parochial Mission Hall, Newington. | J. E. K. Cutts | — | The style adopted for the hall was Gothic, carried out in stock brickwork, with red-brick dressings. The building measures 68ft. by 40ft. and holds 400 people. It is 38ft. high to ridge. |
| St. Augustine's Church, South Bermondsey. | Henry Jarvis & Son | 12,800 (for whole church, exclusive of spire). | The first portion of the work consisted of two bays of the nave, with aisles, and the chancel, which measures 40ft. by 27ft. The facings are of red brick, with Bath and red Dumfries stone piers. The accommodation provided was for 460 people, and ultimately for 1,000. There is a crypt, with a groined ceiling, which forms the floor of the chancel. |
| Wesleyan Chapel, Stamford Street, Blackfriars. | James Weir | 4,000 | |
| **1879.** | | | |
| All Hallows Church, Pepper Street, Southwark. | George Gilbert Scott. | — | The length of the interior is 150ft., and accommodation is provided for 1,200 people. The style of the church is middle pointed Gothic. |
| **1880.** | | | |
| St. Alphege Church, Blackfriars Road, Southwark. | Robert Willey | 6,000 | The exterior is faced with red brick, with Bath-stone dressings. The length is 99ft. and the width 44ft. The church has a nave with no aisles and is capable of accommodating 1,500 people. |
| St. Crispin's Church, Southwark Park Road, Bermondsey. | Coe & Robinson | 16,000 | The building is in the Gothic style in red brick and stone. It contains 600 sittings, and has a reredos of Caen stone. |
| St. George's Church, Perry Hill, Lewisham. | William C. Banks | 8,000 | There is a chancel 40ft. long. The general walling is of Kentish Rag, with Bath stone dressings. The style is English Decorated. |
| Wesleyan Chapel, Norwood and Christchurch Roads, Norwood. | Bell | 11,000 | The chapel is Early Gothic in style. It is of Kentish Rag and Bath-stones and measures 80ft. by 52ft. The arcade columns are of polished Shap granite. The building has a tower 20ft. square, with spire, and a large schoolroom in the basement 51ft. square. |
| **1881.** | | | |
| Mission Church, Algernon Road, Lewisham. | James Brooks | — | |
| **1882.** | | | |
| Baptist Chapel, Gipsy Road, Lower Norwood | Hampden W. Pratt | 4,500 | Externally the building is of Kentish Rag stone, with Bath stone dressings, the style being Early English Gothic. The accommodation is for 740 people. |
| Church of the Good Shepherd, Lee. | Ernest Newton | 1,565 | The external facing is of red brick, and the accommodation is for 600. |
| **1883.** | | | |
| Baptist Mission Hall, Green Walk, Bermondsey. | - - - - | 4,600 | The accommodation provided is for 700 people. |
| Mission Church, Brookdale Road, Lewisham. | Horace T. Bonner | 950 | The general walling to the church is of stock brickwork with red brick arches and dressings. The accommodation is for 300 people. |

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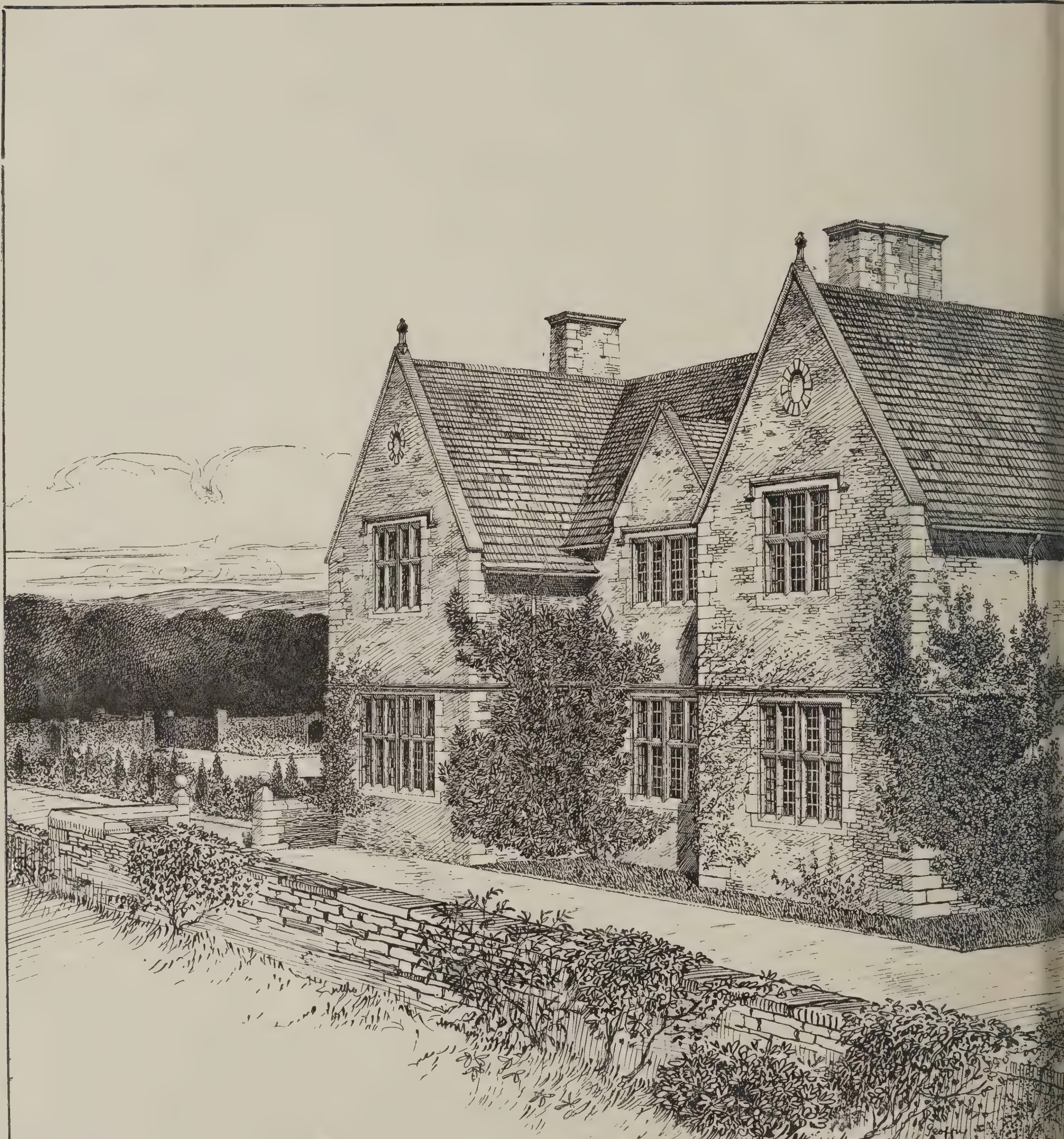

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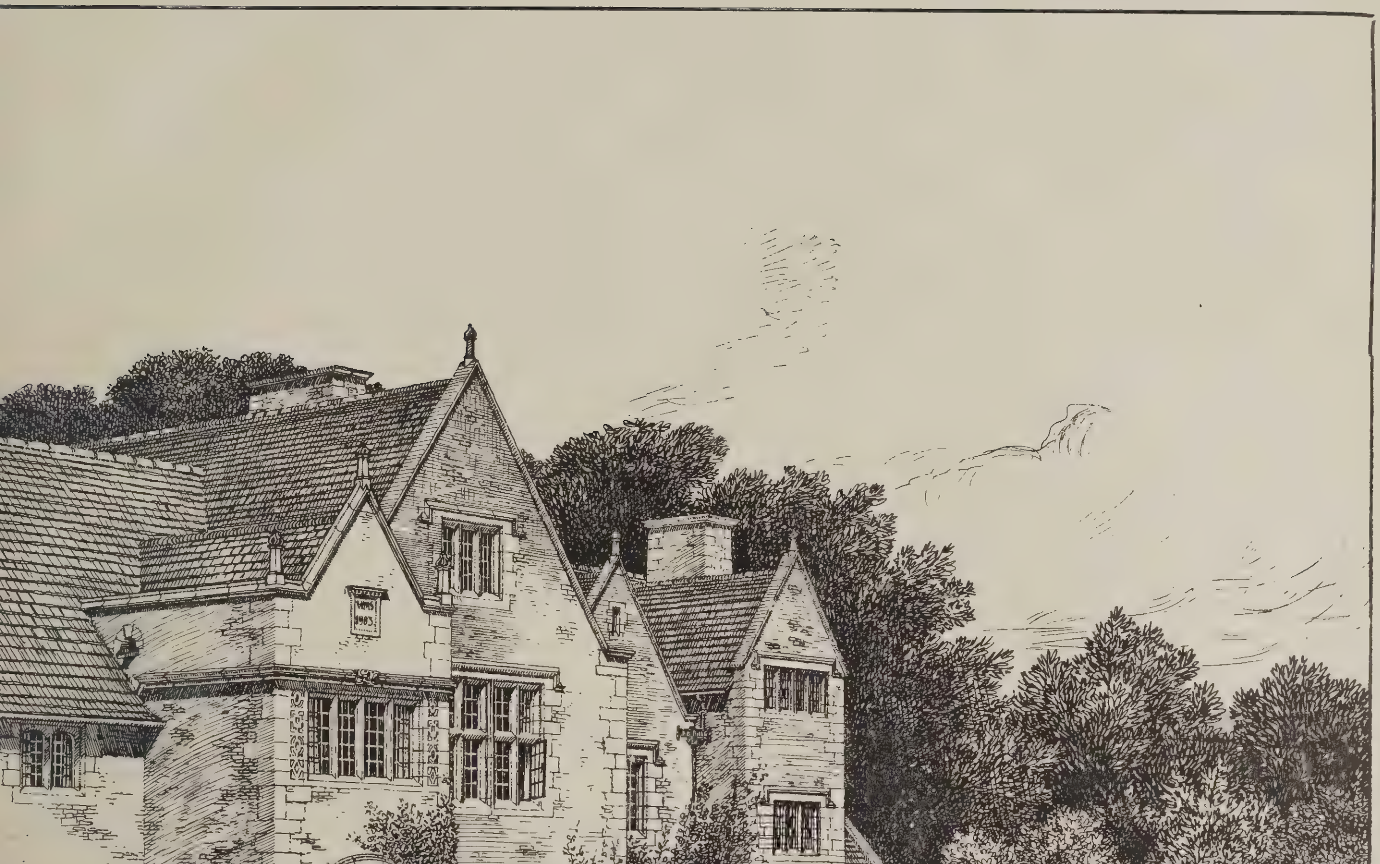

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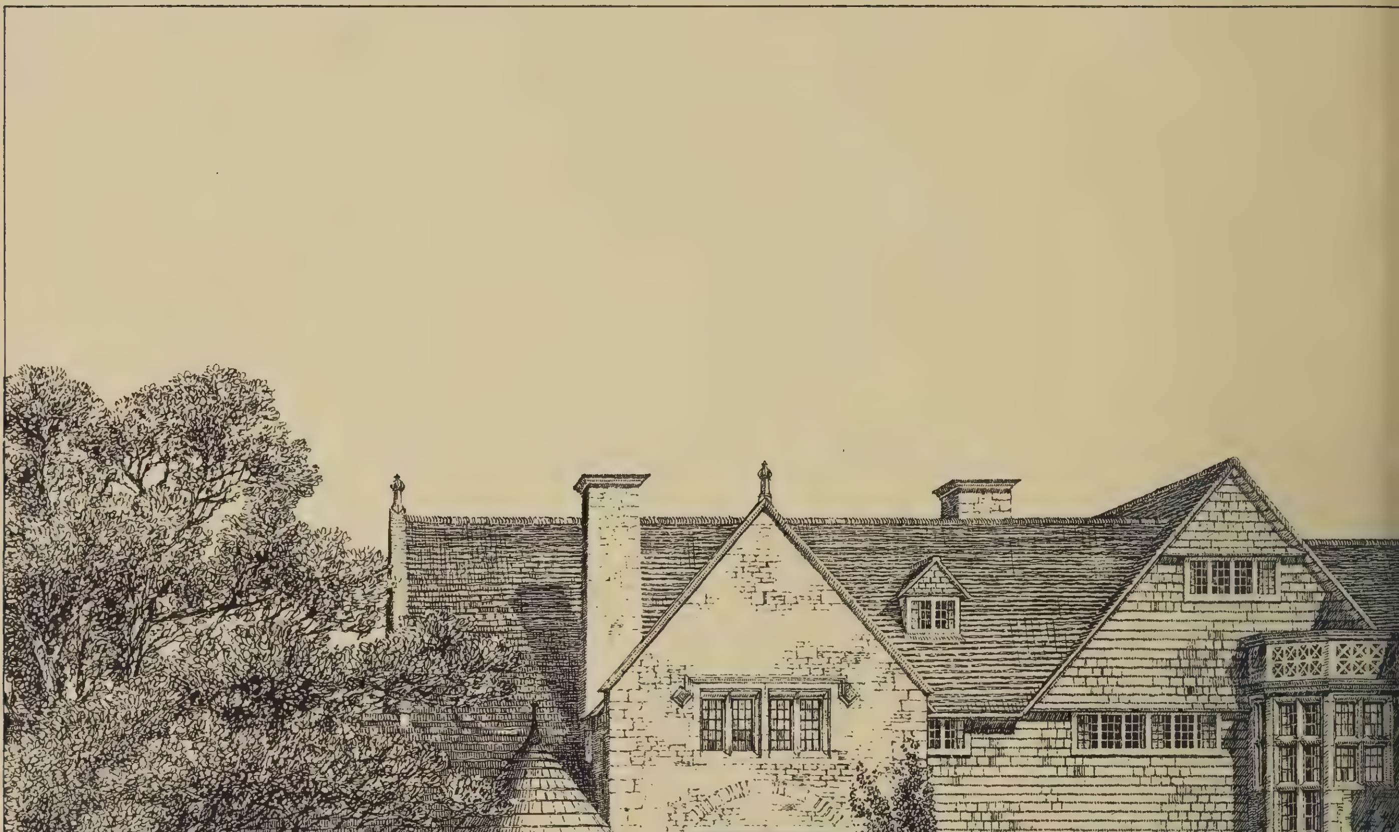

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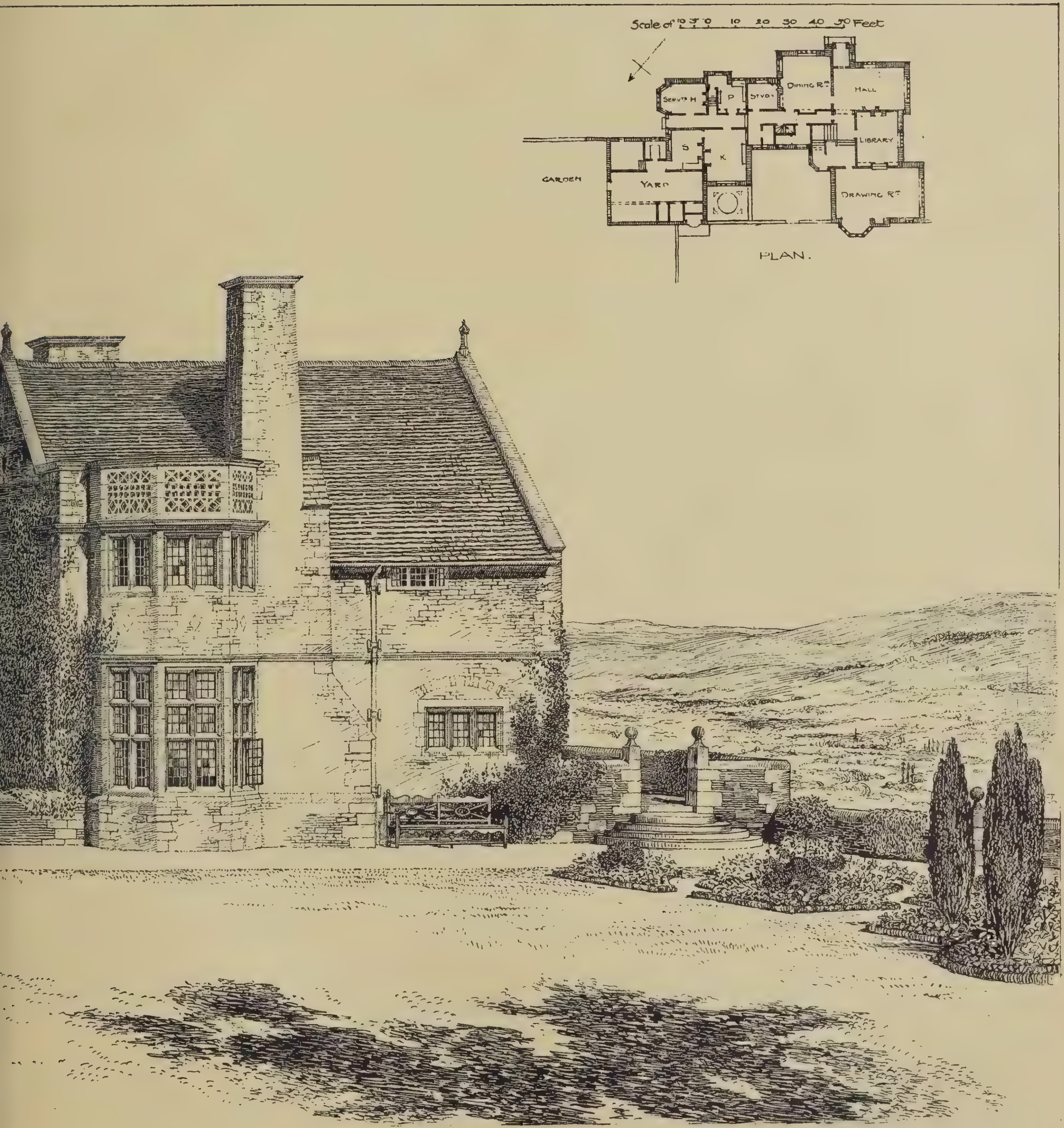

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## S.E. DISTRICT: RELIGIOUS BUILDINGS—*cont.*

| BUILDING. | ARCHITECT. | APPROXIMATE COST. | REMARKS |
|---|---|---|---|
| **1884.** | | £ | |
| arish Rooms of St. Bartholomew's Mission, Camberwell. | Ravenscroft | — | The building consists of upper and lower parish rooms, classrooms, kitchens, &c. |
| t. Mark's Church, Harder's Road, Peckham. | C. Luck | 8,000 | The nave piers are of Portland stone, the exterior being of red brick with stone dressings. There are 800 sittings. The church is 114ft. 6in. long by 67ft. in width, and is in the Early English style. |
| **1885.** | | | |
| urrey Gardens Mission Hall, Walworth. | Romaine - Walker & Tanner. | 2,400 | The mission hall is attached to St. Paul's Church, Lorrimore Square. It measures 70ft. by 55ft, internally. The exterior is of red brickwork and Bath stone, and the accommodation is for 800 people. |
| Vestcombe Park Mission Hall. | Romaine - Walker & Tanner. | — | This mission hall is attached to Christchurch East Greenwich. The building measures 60ft. by 30ft., and contains a classroom 19ft. by 18ft. The hall holds 450 people. It is of stock brickwork, with tile-hung gables. |
| Vorkmen's Institute and Sunday School, Waterloo Street, Camberwell. | R. H. Hill | 2,000 | The building is in the Flemish Gothic style, in red brick with stone dressings. |
| **1887.** | | | |
| Nonconformist Church, Vanbrugh Park, Blackheath. | Thomas Arnold | — | The church consists of a nave and transepts, and has a lecture-hall with classrooms attached. The exterior is of Kentish Rag and Bath stones. There is a tower over 100ft. high. The carving was executed by Mr. Allen. |
| t. Bartholomew's Church, Camberwell. | W. Taprell Allen | 7,500 | The walling is of brickwork, lined internally and externally with red brick, the nave piers being of red Dumfries stone. The nave is 40ft. high to wall-plate. In the tower, which is at the east end of the north aisle, are two vestries, one above the other. Sittings are provided for 700 people. |
| **1888.** | | | |
| ubilee Parish Hall, Myatt's Fields, Camberwell. | G. Hubbard | — | The facings are of red bricks and the dressings of Bath stone. The roofs are tiled with Broseley tiles. The hall is octagonal in shape, being 60ft. in diameter and 50ft. high, and capable of holding 500 people. Behind is a block, containing classrooms, in which educational work is carried on. |
| Velsh Chapel, Falmouth Road, New Kent Road. | Charles Evans | 5,000 | The chapel is faced with picked stock bricks, relieved with red bricks and Ancaster stone dressings |
| **1890.** | | | |
| emorial Chapel, Trafalgar Road, Greenwich. | A. H. Skipworth | — | The chapel is built of brick, with a wooden barrel-vault roof. It is lighted by a three-light window at the west end and a dormer in the chancel. The pavement is black and white marble, with wood-block flooring under chairs. The whole of the interior is decorated. |
| hurch and Mission Hall, for Corpus Christi College (Cambridge) Mission, Canterbury Road. | Richard J. Lovell | 5,000 | The building is on two floors, the lower being devoted to a hall capable of accommodating 500 persons, with a platform at one end and a kitchen behind. The church is on the first floor and seats about 500 persons. |
| resbyterian Church, corner of Townley Road and East Dulwich Grove. | Charles Barry | 5,200 | The building will accommodate 500 worshippers and includes lecture-hall, classrooms, vestries, &c. The church is Gothic in style. |
| . Saviour's, Southwark, (new nave). | Sir Arthur Blomfield. | — | The new nave is Early English in style and designed to harmonize with the existing work in the choir. |
| **1891.** | | | |
| hrist Church, Blackfriars Road, additions. | C. R. Baker King | 6,300 | Chancel 35ft. long, with clergy and choir vestries on south side. The walls are of brick with stone dressings. It is in the round arched style of central Italy. The work is plastered internally, and red and white stones are used for dressings. |
| all for the Church of St. Mary Magdalene, St. Mary's Road, Peckham. | J. C. Perkin | — | This building, which seats 400, consists of a hall 51ft. 6in. by 31ft. 6in., and three adjoining classrooms averaging 17ft. by 14ft. The interior and exterior are faced with picked stocks with red-brick dressings. The queen-post trusses are stained and varnished, together with the whole interior joinery. |
| . Mary's Roman Catholic Church, Cresswell Park, Blackheath. | Alfred E. Purdie | 4,147 | The style is fourteenth-century Gothic, and the accommodation is for 500 persons. The nave is 50ft. high to the apex. There are also a Lady-chapel, two sacristies and a baptistery. The carving of the church was by Mr. D. N. Smith, of Clapham. |
| **1892.** | | | |
| arish Church of St. Barnabus, Dulwich. | Oliver & Leeson | — | The church will seat 790 persons, and the style adopted is Perpendicular. The materials used are brick and terra-cotta, with red stone for tracery and dressings, and slated roofs. |
| Alban's Church, South Norwood. | W Bucknell & J. N. Cowper | 9,000 | The nave is 89ft. long and 29ft 6in wide, with aisles, making a total width of 50ft. 6in. The nave arches and piers and dressings are of Bath stone, the walls being finished with plaster. The chance is 44ft. in length and the same width as the nave. The exterior of the church is of red brick with stone facings. |
| . George's Church, Westcombe Park, Blackheath. | Newman & Newman | 10,000 | The style is Early French. The interior and exterior are faced with red bricks, with Bath strings and dressings. |
| . Swithin's Church, Hither Green. | Ernest Newton | 5,000 | The style adopted is fourteenth century, and the church is faced with red brick with Bath stone dressings. It is designed to seat 600 persons. The roof is open timbered, covered with green slates, and having a lead-covered bell turret placed over the chancel arch. The chief dimensions are as follows: Nave, 66ft. long by 30ft. wide; north aisle, 68ft. by 12ft. 3in.; south aisles, 66ft. by 19ft.; extreme height to apex of gable, 58ft. |
| **1893.** | | | |
| l Saints' Church, West Dulwich. | G. H. Fellowes Prynne | 12,500 (present cost). | The church consists of a lofty nave, 50ft. high and 48ft. wide by 128ft, in length, divided into seven double-arched bays, the piers of which are of red brick and stone. The chancel and sanctuary are the same height as the nave and 28ft. wide by 44ft. long. The north aisle forms the nave of a chapel, whose sanctuary is at the north side of the choir. Present accommodation for 950 persons. |
| resbyterian Church of St. James, Dulwich. | R. Watson | — | The building, which is Gothic in design, is built of stock bricks with stone dressings, and has sittings for 500 persons. |
| **1894.** | | | |
| l Saints' Church, Davey Street, North Peckham. | Walter Planck | 30,000 | The church is built of red brick with Bath stone dressings, and is in the Early English Gothic style. The seating accommodation is for 800 persons. The nave and chancel have continuous wall and roof. Over the chancel arch is a bell turret 45ft. high, and at the south-east angle is a morning chapel. Under the western arcade is a baptistery, and there are two side aisles and a western porch. In connection with the church is a club-house. |
| hurch of St. Catherine, Hatcham. | Henry Stock | 16,000 | The design is cruciform in plan, and the church holds 900 persons. At the north-east end are a tower and spire. A vicarage house stands on the southern side of the church. |
| aryon-Wilson Memorial Church of the Holy Trinity, Woolwich Road, Charlton Road. | John Rowland | 5,868 | The church is built in the early Lancet style in red brick, with stone dressings. The roof is covered with Broseley tiles, with open timber roof to nave and aisles; a small bell turret is erected on the roof, The chancel is panelled, the timbers dull stained, and the floor of the church is of wood blocks on concrete. The chancel porch and narthex are paved with marble mosaic. The carving throughout is by Mr. G. Hawkings, of Regent's Park. |
| ission Hall, Meeting House Lane, Peckham. | R. P. Whellock | — | The building accommodates 250 persons, with two classrooms, kitchen arrangements, &c. |
| . Clement's Parish Room, Barry Road, Dulwich. | J. Stacey Davis | — | The building consists, on the ground floor, of a hall 71ft. by 31½ft., with an external porch, two classrooms, a stone staircase leading to a gallery at the north end of the hall, a soup kitchen, and a smaller hall 64ft. by 22ft. On the upper floor is a room 24ft. by 16ft., and a residence for the assistant clergy and caretaker. The building is of red brick and Doulting stone, and the roof is covered with red tiles. |
| hurch of St. Matthias, Upper Tulse Hill. | J. T. Newman & W. Jacques. | 6,000 | The church seats 900 people, and is a plain structure in the late thirteenth-century style, with a nave of five bays, aisles and chancel (the dimensions being 135ft. by 62ft.) having a wood-vaulted ceiling and wood-block floor. The external walls are of red brick, relieved only by stone copings to buttresses, and pierced by lancet windows to aisles and clearstorys and a five-light window at the west end. The east end has an apsidal termination. The roof is waggon-vaulted and covered with tiles. |
| ongregational Church, Dulwich Grove. | James Cubitt | — | The interior is of timber and plaster with pressed-brick arches and mouldings. The nave is an oblong about 50ft. wide, divided into three spans by two pitch-pine columns on each side. The columns are so spaced that the middle span is much wider than the others. At one end of the nave is an arch about 24ft. wide, opening into the end gallery and carrying a brick and stone ventilating turret. There are 570 sittings provided. |
| **1896.** | | | |
| aptist Chapel, Ilderton Road, South Bermondsey | George Baines | — | The internal dimensions are—width 49ft., length 59ft There are galleries on three sides of the chapel, the total seating accommodation being for 700 people. The roof is in three spans, the central one being carried up higher than the others and having clearstory windows. The front has two arched doorways, surmounted by two pilasters, carried up as pinnacles on either side of the central gable. Each of the gables has moulded brick cornices, finished with a stone coping. |
| ission Hall, Richmond Street, Walworth. | George Baines | 1,690 | The hall is 53ft. long by 33ft. wide, with two entrance lobbies and a staircase leading to a gallery. In addition to these there are four classrooms and a kitchen. The whole is surmounted by an open-timber roof. The main front is to East Street, and has two pointed-headed doorways, moulded in stone, flanked on either side by pilasters. |
| **1897.** | | | |
| hapel and Schools for the East London Primitive Methodist Mission, Old Kent Road. | Prof. Banister Fletcher & Banister F. Fletcher | — | The chapel is 60ft. long, and is designed to seat 400 people on the ground floor and 250 in the gallery, at first-floor level. On the second floor are the caretaker's rooms. Behind the chapel on the ground floor is placed a large schoolroom, fitted with movable screens for classrooms, and the roof is so designed that the room can be used as a gymnasium. On the basement floor are heating chamber, cellar and kitchen. The building is constructed of red brick and Portland stone externally, and is roofed with green Westmorland slates, the style adopted being the eighteenth-century Classic style. |

## S.E. DISTRICT: RELIGIOUS BUILDINGS—*concluded.*

| Building. | Architect. | Approximate Cost. | Remarks. |
|---|---|---|---|
| **1897**—*cont.* | | £ | |
| Presbyterian Church, corner of Thurlow Park Road and Court Road, West Norwood. | Treadwell & Martin | — | The building comprises a church with minister's, elders' and choir vestries, and a large hall and classrooms Internally the nave arcade has been dispensed with, in order to obtain an uninterrupted view of the pulpit. The materials employed are red-brick facings externally, while internally the dressings are of Portland stone and the roof and seating of pitch-pine. |
| St. Mark's Church, Plumstead Common. | Richard J. Lovell | 12,000 | The church is designed to seat 650 persons, and is on the first floor. Beneath it is a hall capable of seating 550 people. The church is approached from a loggia by two stone staircases. The materials used are red bricks and Portland-stone dressings. |
| **1898.** | | | |
| Methodist New Connexion Chapel and School, Ivydale Road, Nunhead. | R. Clamp | 3,000 | The site has a frontage of 100ft. with a depth of 90ft. The chapel will seat 400 people, and a hall is provided to seat a similar number. The walls are of brick, with Monk's Park stone dressings. |
| Metropolitan Tabernacle, Newington Butts (rebuilding of the lower hall). | Searle & Hayes | — | The hall accommodates 2,000 persons, and is 112ft. long by 80ft. wide. The roof is supported by iron columns, and the walls are covered with varnished match-boarding. |
| Tabernacle, Winterbrook Road, Herne Hill. | Charles Barry | — | The building is of red brick, capable of holding 500 persons. |
| Dudfield Memorial Hall, Lansdowne Place, Southwark. | Searle & Hayes | — | This hall was added on to the Lansdowne Place Ragged School, and was designed to accommodate about 500 children. |
| St. Jude's Church, Southwark. | W. J. H. Leverton | 4,000 | The site of the church being short, the nave and chancel are carried through at the same width and the roof carried through at the same height, without any chancel arch. The aisle next the rood is very narrow, being only 18ft. 6in. wide, so as to bring the clearstory well to the front. The other aisle is 21ft wide and the nave 23ft. The nave and aisles are supported by clustered columns, carrying arches of moulded red brick, with a clearstory over of single-light windows with cusped heads. The exterior is faced with Lawrence's red bricks, and the interior partly with red and partly with Barham bricks. The stone used is Monk's Park outside and Corsham Down inside. The flooring is of pitch-pine wood blocks. |
| **1901.** | | | |
| Christ Church, Lower Sydenham. | G. H. Fellowes Prynne | 13,590 | The building will accommodate 850 adults. The main form of the plan is a nave 93ft. long by 34ft. wide, divided into five bays of 18ft. centres. Broad processional passages are placed on either side, leading into north and south transepts, that on the south side terminating in an apsidal-ended chapel and that on the north in an organ-chamber. The chancel is 41ft. 6in. long by 28ft. wide Spacious clergy and choir vestries are placed on the north side, with heating chambers under. The materials used are red brick, relieved with stone dressings. |
| Memorial Chapel, St. Peter's Church, Walworth Road. | Maurice B. Adams | — | |
| St. Cyprian's Church, Adelaide Road, Brockley. | Sir Arthur Blomfield | — | |
| St. Mark's Church, Plumstead Common. | C. H. M. Mileham | — | The church will accommodate 1,200 people. It consists of a nave and aisles of five bays, and a low galilee at the south end, a vestry and sacristy, with heating chamber under. The architecture is of a simple character, the walls of concrete, with inner and outer skins of rough brickwork, and a very sparing use of stone, plastered inside and rough-cast outside. The whole building will be covered with concrete vaults, with an outer roof of fir purlins and rafters, covered with pantiles. A men's institute, parish hall, classrooms and parsonage are also to be erected. |
| **1902.** | | | |
| St. Andrew's Church, Greenwich. | Basil Champneys | 15,000 | The style of the church is Late Gothic. The cost was provided for by the sale of the site and property of the Church of St. Michael and All Angels, Wood Street, E.C., the font of which was placed in the new church. At the east end of the church is a stained-glass window in the shape of St. Michael's cross. |
| St. Andrew's Mission Hall, New Kent Road. | G. A. Lansdown | 3,300 | The front elevation is of brown and yellow Luton bricks with Portland-stone dressings. The ground floor of the main building, which is used as boys' and infants' halls, is separated by a swivel partition; the whole space thus acquired forms a gymnasium. There is also a kitchen on this floor. The first floor is used as a girls' hall, but is also available for concerts and entertainments. The roof is open-timbered and has a span of 33ft. There are in addition several smaller classrooms. |
| St. Silas's Church, Ivydale Road, Nunhead. | J. E. K. & J. P. Cutts | 6,500 | The portion of the church at present being built will accommodate about 500 people. It is of brick, with Kentish Rag and Bath-stone external facings. |
| Mission Building for the United Girls' School Mission, corner of Landover and Kempshead Roads, Camberwell. | R. Creed | — | The building is of red brickwork with stone dressings. The present roof is temporary, as the scheme will not be completed for some time. |

*(To be continued.)*

# MANCHESTER SCHOOL OF ARCHITECTURE.

THE Manchester School of Architecture has been established pursuant to arrangements made between the Owens College, the Manchester Municipal School of Technology, the Municipal School of Art and the Manchester Society of Architects.

The Advisory Committee consists of Mr. J. W. Beaumont, F.R.I.B.A., Mr. Councillor Brocklehurst, M.A., Mr. J. F. Cheetham, B.A., Mr. Neville Clegg, Alderman Sir James Hoy, LL.D., Mr. Paul Ogden, F.R.I.B.A., the Principal of the Municipal School of Technology, the Principal of the Owens College, Professor Schuster, Ph.D., F.R.S., Professor Tout, M.A., Mr. Charles Rowley, M.A., Mr. Councillor Wilson and Professor S. H. Capper, M.A., A.R.I.B.A., Director of the School of Architecture.

The following courses have been arranged, subject to such modifications as may be found requisite on Professor Capper's arrival in Manchester next month:—

(1) *History of Architecture.*—Tuesday and Thursday, 9.30 to 10.30. A general survey of architectural history from Ancient Egypt to modern times, with special reference to the evolution of styles and to constructional forms and methods. The course includes: Ancient Egypt and Assyria; Greece; Rome; Byzantine and Early Christian Architecture; Romanesque; Monastic; Gothic; Renaissance. Fee £2 12s. 6d.* This course will be delivered in the Owens College.

(2) *Elements of Architecture.*—Friday, 11.30 to 12.30. The Classical orders, Greek and Roman, their mouldings and details; arcading, Classical and Gothic. Gothic mouldings and details; their construction and design; elements of architectural effect; composition and style. Fee £1 11s. 6d.* This course of lectures will be given in the Municipal School of Technology.

(3) *Architectural Drawing and Design.*—Studies of the orders; rendering with pen and brush. Elementary design. (The drawing classes will meet in the Municipal School of Technology.) The architectural drawing-rooms are open both forenoon and afternoon for the study of the programmes and exercises set in connection with the lectures on the elements of architecture and in the class on architectural drawing and design. The professor of architecture will examine and criticize the work on certain days at stated hours to be arranged with the class.

(4) *Freehand Drawing and Modelling.*—The days and hours will be announced subsequently. This class will meet at the Municipal School of Art. Mr. Glazier, A.R.I.B.A., Mr. Corbett, A.R.I.B.A., and other members of the staff of the School of Technology and of the Municipal School of Art will take part in the instruction given in those institutions respectively.

The above courses are intended—

(1) For students who intend to take the degree of the Victoria University in the Honours School of Architecture. The regulations will be found at page 139 of the University Calendar. Persons seeking admission to the University courses must have attained the age of sixteen years, and produce testimonials of good character from their last instructor, or such testimonials as shall be satisfactory to the principal. New students will be admitted at the college on Thursday, 1st, and Friday, 2nd October, from 10 a.m. to 1 p.m., and from 2 p.m. to 3.30 p.m. On subsequent days, except Saturdays, students will be admitted between 11 a.m. and 1 p.m. Students proceeding to a degree must also be presented to the Vice-Chancellor for matriculation on a day to be fixed in Michaelmas term. (Inclusive fee for full honours, first year course, £18 18s.)

(2) For students who desire to take a full course in architecture without proceeding to the degree. These students enter either at the college on the days and hours above mentioned, or at the Municipal School of Technology on and after September 21st, from 9 a.m. to 5 p.m.

(3) For students who desire to attend any of the special lecture courses of Professor Capper.

(4) For students who desire to attend special courses at the School of Technology or School of Art, including certain of the courses in the School of Architecture. Such students will enter at the School of Technology or at the School of Art, as the case may be, on and after September 21st, from 9 a.m. to 5 p.m.

*Second and Third Years.*—An announcement will be made after Professor Capper's arrival in Manchester as to courses for a second and third year. A further announcement will be made with regard to the classes on building materials and construction, descriptive engineering, sanitary engineering.

*Popular Introductory Lectures.*—A course of four popular introductory lectures will be given by Professor Capper in the Whitworth Hall during October and November, at 8 p.m., on "History in Architecture: The Mediæval Abbey and Monastic Orders and the Mediæval Cathedral." Admission to these lectures will be free.

Enquiries may be addressed either to the Principal of the Owens College or to the Principal of the Municipal School of Technology, Manchester.

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* The usual college entrance fee of £1 1s. or sessional fee of 7s. will also be payable.

BOOT FACTORY, KIRKSTALL ROAD, LEEDS. PERCY ROBINSON, ARCHITECT.

# Enquiries Answered.

*The services of a large staff of experts are at the disposal of readers who require information on architectural, constructional or legal matters. Questions should in all cases be addressed to the Editor. The querist's name and address must always be given, not necessarily for publication.*

### Oxford Colleges.

London, W.—F. W. M. writes: "Have you ever published such an interesting account of buildings in Oxford as that describing Cambridge? How could I get permission to sketch and measure some of the old interior woodwork?"

An illustrated article on "Recent Work at Oxford" was published in our issue for February 18th last. Particulars of recent restorations to the colleges and new buildings will be found in our issues for November 13th, 1901, and October 29th, 1902; of New College in the issues for May 1st, 1901, and December 17th, 1902; Magdalen, p. 82, March 6th, 1901; Brasenose, p. 410, December 26th, 1900. Request to sketch or measure should be sent to the principal of the college, with stamped addressed envelope for reply.

### Setting-out a Plan.

Nottingham.—M. W. writes: "In making a plan of some very irregularly-shaped town buildings, how am I to set out the angles, as it does not seem possible to get a base line in a number of small rooms? Is there a book on this kind of surveying?"

The principles of land surveying do not apply in the least. The whole should be roughly plotted to scale on the spot, preferably on paper ruled in $\frac{1}{8}$in. squares, each room being treated separately, and diagonals being frequently—in fact, as often as possible—taken. All comprehensive measurements, such as those of the whole length of a wall, should be taken as well as the details, and the latter totalled at once to ascertain that they equal the former, and all should be entered on the sketch. Two articles on the subject, by Mr. R. W. Carden, appeared in The Builders' Journal for August 20th and 27th, 1902. M.

### Buildings to Sketch in Devon and Cornwall.

Plymouth.—Enquirer writes: "Kindly mention what there is worth sketching at the following places:—St. Germans (Cornwall), Plymstock, Tavistock, Bere Ferrers, Plympton (Devon)."

Plymstock church is Early English, but I can find nothing about the other places mentioned. Surely information could more readily be obtained locally, from guide-books or a public library, than from us. M.

### Buildings to Measure on the Isle of Wight.

South Croydon.—H. G. T. writes: "Kindly name some buildings on the Isle of Wight suitable to measure for the R.I.B.A. intermediate examination. Do you know of a book dealing with the architectural history of the island?"

A good "Classic Ornament" sheet, in colour, could be obtained from the mosaic pavement of the Roman villa at Brading. Wootton Church (close to Brading), Yaverland Church and Carisbrooke Castle are Norman; Colbourne church and the ruins of Quarr Abbey, about a mile beyond Binstead from Ryde, are Early English; while Carisbrooke and Motteston churches are Perpendicular. Quarr ruins contain some good simple detail, though the buildings are much destroyed; but it is many years since I have seen them, and the churches I have scarcely noticed. G. A. T. M.

("H. G. T." evidently forgot that when his query arrived at this office we would be going to press for the only issue before the date when he required an answer, and the query had to be sent to our contributor, who generally needs a few days in which to consult reference books before returning his answer to us. Other correspondents should bear these facts in mind.)

### Norwich or Lincoln.

Oldham.—E. E. writes: "Which town would you recommend me to visit, Lincoln or Norwich, for the purpose of measuring buildings for the R.I.B.A. examination? Can I obtain examples of both Early English and Perpendicular in the one place?"

At Norwich you would obtain Decorated work in the cathedral, the cloisters being particularly well suited to your purpose; and Perpendicular work at almost all the many churches. On this account I should recommend Norwich in preference to Lincoln, where the work is either Norman, rich Early English, or elaborate Decorated—the latter, as in the Galilee Porch, so elaborate as to be beyond the power of most R.I.B.A. students to delineate successfully. M.

### Drain Testing.

Baden writes: "Which is the usual way to test an ordinary house drain by the water test?"

The water test should be applied before the drains are covered in. The lower end of the drain is securely stopped with a drain plug, and the drain filled with water to the level of the gulley trap, or the temporary head at the higher end of the drain. In the case of a trapped gulley, a piece of lead pipe should be bent and passed through the trap so as to allow the imprisoned air to escape. Where required, a temporary head can be arranged by fixing a bend and length of drain pipe in a vertical position at the upper end of the drain with well-puddled clay. If, after half an hour or so, the level of the water in the drain has subsided, a careful examination should be made to ascertain the cause of leakage. It is not desirable to test stoneware drains to a greater head of water than 5ft. or 6ft. T. E. C.

### The Manchester School of Technology.

London.—Scientia writes: "Where have plans or descriptions been published of the new municipal school of technology at Manchester? How far is the school from the L. and N.W. railway station?"

Some particulars and an illustration of the school were published on p. 164 of our issue for October 22nd last. The building is in Sackville Street, not far from the station you name.

### Measured Drawings of St. James's Church, Piccadilly, and the Sheldonian Theatre, Oxford.

London, N.W.—C. L. G. writes: "Where can I find measured drawings of St. James's Church, Piccadilly?"

London, N.—J. D. C. writes: "Have any measured drawings of the Sheldonian Theatre at Oxford been published?"

So far as I have been able to ascertain, measured drawings of neither of these buildings are to be found. G. A. T. M.

### Mechanics and Physics.

Edinburgh writes: "Which is the best book for studying mechanics and physics prescribed for the R.I.B.A. elementary examination?"

"Theoretical Mechanics" (2s. 6d.), "Theoretical Mechanics—Solids" (2s. 6d.), "Theoretical Mechanics—Fluids" (2s. 6d.)—all three by J. E. Taylor, M.A., B.Sc. (Lond.); "Elementary Physics," by Mark R. Wright, M.A., price 2s. 6d. These books can be obtained from Mr. B. T. Batsford, 94, High Holborn, W.C.

### R.I.B.A. Elementary Examination.

Halifax.—Probationer writes: "Which are the best books on mouldings and ornament of Gothic architecture, and strength of materials, to study for the R.I.B.A. intermediate examination?"

Unquestionably the best book is J. K. Colling's "Details of Gothic Architecture," of which copies can be obtained from Mr. Batsford, 94, High Holborn, W.C., for £2 2s., though the work was published at £5 5s. originally. The questions set upon theoretical construction are of quite an elementary nature. Two out of the seven set in June, 1902 (see the R.I.B.A. Kalendar), are mere matters of arithmetic (Nos. 4 and 6), and the rest are quite simple. Middleton's "Stresses and Thrusts" (Batsford, 4s.) should suffice. M.

### Formula for Joists.

Carlisle.—G. R. writes: "What is the simplest formula for getting out the size of floor joists, having the weight to be carried only?"

The ordinary rule for fir joists for dwelling-houses is "Depth = $\frac{1}{2}$ span + 2, thickness = $\frac{1}{3}$ depth, placed 12in. apart." So that for a 14ft. span the size would be $\frac{14}{2} + 2 = 9$in. deep, and $\frac{9}{3} = 3$in. thick. Under this rule 11in. joists should not be used for a greater span than 18ft., and this would be good practice, although there are cases where 11 × 3 joists have been used on a 22ft. span. When a joist or other timber beam is to be used for carrying a certain load a very handy and safe rule is $\mathrm{W} = \frac{bd^2}{\mathrm{L}}$, where W = safe load in cwts. distributed, $b$ = breadth or thickness in inches, $d$ = depth in inches, L = clear span in feet. This modification of the value of W and omission of the usual coefficient makes the result equivalent to allowing a factor of safety of 7, which is a very reasonable allowance under ordinary conditions.

HENRY ADAMS.

## NEW BATHS AT BRISTOL.

### Kane's System.

The new baths erected at Barton Hill by the Corporation of Bristol were opened last week. In the building there is a swimming bath, slipper baths and Kane's bath. The swimming bath tank is 75ft. by 30ft. lined with white glazed brickwork and scum trough. The dressing boxes (of which there are forty-three) are made to fall back against the wall, leaving the gangways free when special aquatic entertainments are given or when the swimming baths is being used as a public hall. The main walls are lined with glazed bricks to a height of 7ft., and finished above with painted Keene's cement. For the first time in Bristol the water in the bath is heated by steam injections. An arrangement is also made for freshening the water by means of aerators, which introduce air into the bottom of the bath, permeating the water and imparting a freshness which is much appreciated by the bathers.

The slipper baths are grouped in well-lighted, ventilated and heated compartments, formed by glazed brick walls 7ft. high, finished above with painted Keene's cement, with open timber roofs having lantern lights, and floored with terrazzo paving. Each bath is placed in a cubicle 6ft. by 6ft. There are ten slipper baths for women and six first-class and eighteen second-class baths for men.

One of the most interesting features of the whole scheme is the introduction of the special baths, known as "Kane's Baths," designed by the superintendent. The plans illustrate a method of constructing bath compartments so that the bathroom is separated from the dressing-room, whether slipper or spray baths are the cleansing medium employed, Mr. Kane holding it to be essential that the bathing compartment should be maintained at a considerably higher temperature than the dressing compartment, both as a means of more thoroughly cleansing the body and as a preventive of chills to the bather. The system consists of a specially-designed central bathroom in which are placed the bath compartments, fitted with slipper, spray, shower and needle baths, or a combination of each, and a suitably designed system of dressing-rooms. An arrangement is provided for the heating of these rooms, so that an ample supply of fresh, warm, dry air is delivered to each bathroom at 110 degs., and to each dressing-room at 65 degs. Fahr. The fan, with the steam heater in the chamber below, is driven by electric motor, which can be worked by the attendant above. Extra gratings and flues are provided in the adjoining walls, capable of adjustment to suit any conditions.

The engineering arrangements are on the most approved principle. There are two Lancashire steam boilers, each 22ft. long by 6ft. diameter, one boiler being equal to the whole demands of the establishment. The boiler-house is provided with tanks for the storage of about 9,000 gals. of water, and a separate cold-water storage tank is also provided for Kane's baths. From these boilers high-pressure steam is taken to the laundry, and also to the heating apparatus aerators in connection with the plunge-bath, and there is a low-pressure heating service with radiators and steam heating pipes for warming the whole of the building, which is lighted throughout by electricity. The general contractor was Mr. A. J. Beaven, of Dean Lane, Bristol. The sketch plans for the establishment were prepared by the city engineer, whilst the working drawings, specifications and superintendence were undertaken by Mr. W. S. Skinner, architect, of Bristol. The amount of contract for the building work is £13,680, and for engineering close on £3,000. Mr. James Hurn acted as clerk of the works.

## SCIENTIFIC MASONRY.—I.

### Ramp and Twist Coping to Wing Wall.

By JOHN WORNELL.

To illustrate this problem, and to produce the working drawings, which may be classed under two heads, (1) geometrical projections and (2) development of surfaces, I take for the plan a segment of a cylinder, the convex of which is divided into a convenient number of equal parts. These, radiating to the centre, divide the concave also into the same number of equal parts. Next set up the elevation, A O being the inclination of the ramp. For the developed face moulds, measure the length of curve on plan, 1 to 9. Carry same on to horizontal, A to S. Erect the vertical, cutting the horizontal at X. Connect A X with a straight line. This gives the exact arris line A O on elevation. To this add the thickness of the coping; then the mould is complete. As will be seen, joints are at right angles. Repeat operation for concave, of course at the inner curve on plan, and produce W R Z.

There are two methods whereby the stones may be worked:—

(*a*) As a segment of a cylinder of the full height M to O. In this case the size of the stone required is:—

2ft. 9in.
E F G H 1ft. 6in. = 8ft. 9in. cube.
2ft. $1\frac{1}{2}$in.

(*b*) By what is known as the containing prism. This is simply the cylinder cut obliquely as shown, A B C D. The normals already erected are then projected to produce the developed raking bed mould, as 6, concave and convex, 5 being the centre. All other points follow, which need not be described. I J K L are the extremes of this bed mould. By this method the size of stone required is:—

4ft. 6in
1ft. 6in = 5ft. cube.
$9\frac{1}{2}$in.

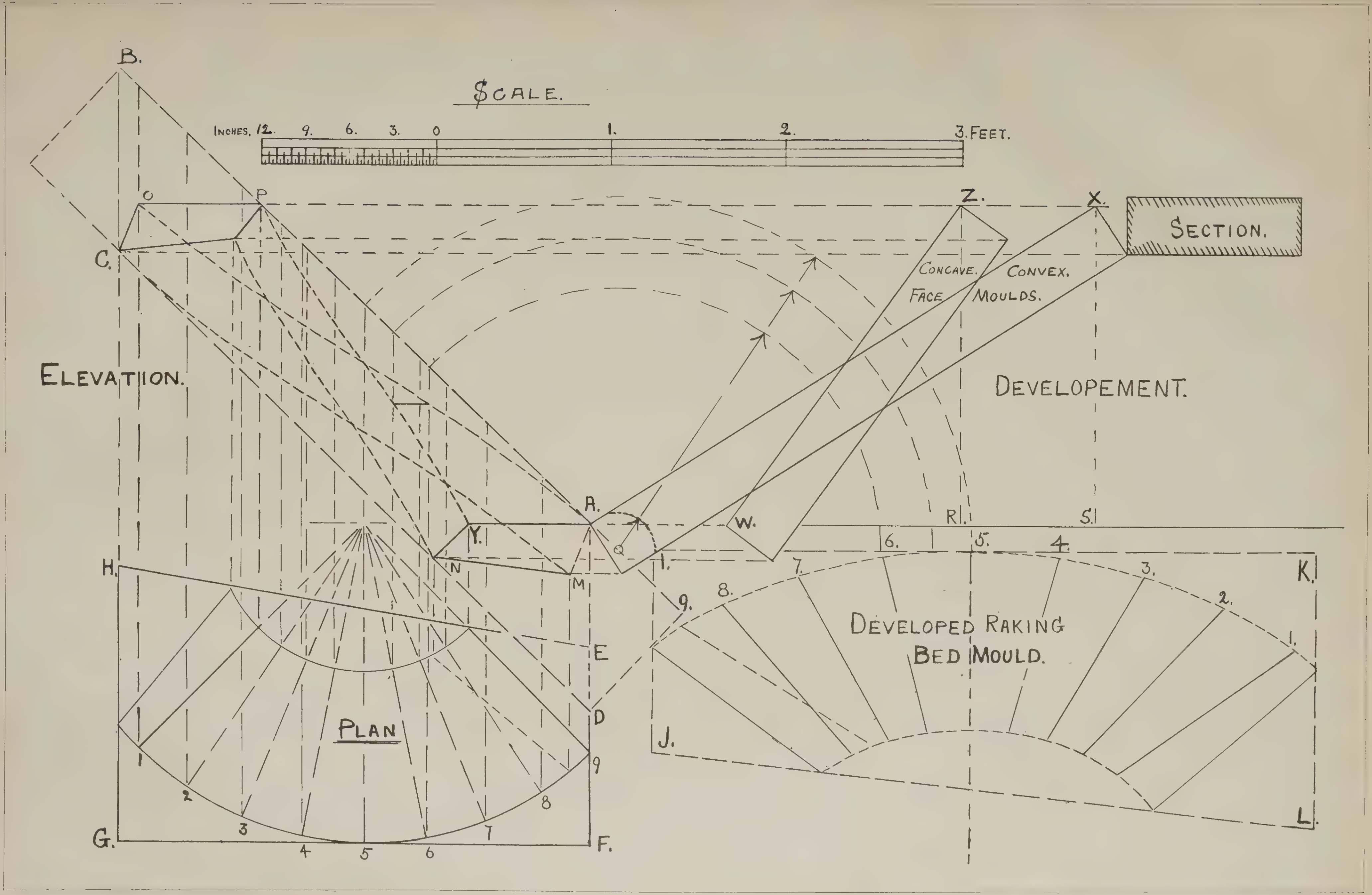
In many places the question of stone is undoubtedly one for consideration, and must influence the mason as to excessive waste and labour.

The face moulds are required for both methods. All the rays shown on plan are horizontal planes from convex to concave, and can be determined with the straight-edge when working the twisted surface.

I think with these few particulars, and the illustration, apart from any elementary principles that are involved, and which it is not my intention to touch upon in this series, there should be sufficient to enable a mason to set up a working drawing, to cut his moulds, and work the stone correctly.

*(To be continued.)*

**Boot Factory, Kirkstall Road, Leeds.**—This factory, illustrated on the preceding page and erected from designs by Mr. Percy Robinson, of Leeds, covers an area of about 1,180 sq. yds. On the ground floor are the offices, stock rooms, store-rooms, engine and boiler-house, also dynamo, &c. The first floor is devoted to the clicking, riveting and other general manufacture departments. On the second floor is the finishing department, while the heavy leather-cutting machinery is placed in the basement storey at the back.



SCIENTIFIC MASONRY; RAMP AND TWIST COPING TO WING WALL. BY JOHN WORNELL.

# Keystones.

**Mr. Percy E. Nobbs** has been appointed to the McDonald Chair of Architecture at McGill University, Montreal.

**Competition for Soldiers' Memorial, Kingston-on-Hull.**—First premium, Messrs. The Leeds Slate & Marble Co.; second, Messrs. J. Whitehead & Sons, of London.

**The Theatre Royal, Birmingham,** is to be rebuilt for Mr. Tom B Davis from designs by Messrs. Ernest Runtz & Co. A row of shops will be included in the scheme.

**A Memorial to Queen Victoria at Newport, I.W.,** in the Market Square, was unveiled by Princess Henry of Battenberg last Thursday. It is a tall column of Derbyshire limestone surmounted by a Victoria Cross, with symbolical figures in bronze at the base. Mr. Percy Stone was the architect.

**The Queen Victoria Memorial.**—What may be regarded perhaps as the first really practical step in the construction of the new road leading from the Mall into Charing Cross was taken on Wednesday last when the contents of five old houses in Spring Gardens were sold by auction, preparatory to early demolition.

**Glasgow and West of Scotland Technical College.**—The calendar of this college for the session 1903-04 has just been issued, price 1s. During the past session there were 652 students at the day classes and 4,305 at the evening classes, 938 of the latter being architects, measurers or others connected with the building trades.

**Nottingham Castle.**—At the next meeting of the Nottingham Corporation the Castle Museum Committee will ask for a loan of £10,000 for restoration and other works at the castle—chiefly the restoration of the lodge (which has been in a dangerously dilapidated state for several years), the repair of the boundary walls, the building of an estate office for the Duke of Newcastle's agent, and the laying-out of the gardens to the south-east of the castle.

**The Old Parish Church of Mundesley, Norfolk,** has been undergoing restoration, the work including the removal of the ugly pyramidal roof, with its flat plaster ceiling, and of the temporary chancel, and the restoration of the whole of the nave and a portion of the original chancel. Messrs. Wilkins & Randall, of Norwich and Mundesley, were the contractors, and Mr. Arthur J. Lacey, of Norwich, was the architect The discovery of some fragments of Norman mouldings, together with the remains of a Norman arch in the west gable leading into the tower, show that the church was founded at least as early as the end of the eleventh or beginning of the twelfth century.

**A Rowton House for Hull.**—"Victoria Mansions," which has been built at Hull for the accommodation of single men, was opened last week. The building has a frontage of 186ft. to Great Passage Street and a depth of 134ft. It comprises a basement and four floors above. On the ground floor is a large octagonal hall, from which the day rooms are entered direct, and here a staircase leads to the floors above. The smoking-room is 80ft. long, the dining-room is over 90ft. long with a floor area of 2,800ft., and a reading-room is provided of about the size of the smoking-room. There are 400 cubicles, each with a window opening direct into the air. The charge is 6d. per night. Messrs. Gelder & Kitchen, of Hull, were the architects. The brickwork was done by Mr. G. Houlton, masonry by Messrs. Quibell & Sons, joiner's work by Messrs. J. Houlton & Son, slating by Messrs. Dawber, Townsley & Co., plumbing by Mr. F. Abba, painting by Messrs. J. Y. Torr & Son, hot water by Messrs. T. Bradford & Co., of Manchester, and electric lighting by Mr. A. Shaw, of Hull.

**Henley Bridge** is insecure; there is a fracture extending from the Oxfordshire side to the middle of the bridge. A thorough examination will be made.

**A Memorial Window at Lichfield Cathedral** has been erected in memory of the Staffordshire Yeomen and Volunteers who fell in South Africa. It was executed by Grylls.

**An Extension to the Southampton Corn Market** is now being erected within the Cattle Market. The building will be 52ft. by 32ft. and one storey high: cost about £775. The plans were prepared by the borough engineer, and the contractor is Mr. W. Ward, of Southampton.

**The Architect to the Board of Education.**—In the House of Commons last week, replying to a question, Sir W. Anson stated that Mr. E. R. Robson has been engaged for eighteen and a half years as consulting architect to the Board of Education. His engagement will terminate on September 30th. No question of competency is involved. The Board are making new arrangements to meet new conditions, and will take care that they are properly provided with expert assistance. Before his appointment to the Education Office Mr. Robson was architect to the London School Board.

**The Royal Architectural Museum.**—The Architectural Association has now acquired possession of the Royal Architectural Museum in Tufton Street, Westminster, and has obtained from the Ecclesiastical Commissioners a new lease for 999 years on most advantageous terms. A contract with Messrs. Holloway Brothers for the necessary reconstruction has been entered into, the amount being £8,440. Donations and promises have been received amounting to about £4,500, leaving a balance of £5,000 still required. In view of the importance of the work of the Architectural Association to the profession generally, an appeal is made for further donations, as it is earnestly hoped that the new premises may be entered free from debt.

# Obituary.

**Mr. W. H. Over,** builder, of Rugby, died last week. He was within a day or two of his seventy-second birthday.

**Mr. H. B. James,** contractor, formerly of Grimsby, died in London last week. Among other works, he carried out the pier gardens and sea wall at Cleethorpes and important works at Grimsby docks.

**Mr. Thomas Huxley,** builder, of Malpas, died last week, in his eighty-third year. He owed much of his success to his courage. A menagerie put up one night close to his business premises, and early next morning a neighbour was struck with terror to see the head of a huge lion pushed through a hole which the beast had gnawed in the woodwork The proprietor of the show sent for deceased to repair the damage. Mr. Huxley entered the cage, and, not deterred by the savage growls of the lion, made the necessary repairs.

**Mr. Sands Lindsay,** of the firm of John Lindsay & Son, slaters and cement merchants, of Montrose, died on August 8th, aged sixty-five. He was the third son of the late Mr. John Lindsay, head of the firm which has been in existence for over a century. For some time he was engaged in business in London, but a good many years ago he returned to Montrose and entered the office of the firm, acting as assistant to his brother, the late Mr. Robert Lindsay. On the death of the latter in 1897 the firm was reconstructed, the partners being Mr. Sands Lindsay and his nephew, Mr. John Lindsay, who is now the head.

# Builders' Notes.

**Messrs. Hartley & Sugden, Ltd.,** of Atlas Works, Halifax, makers of wrought, welded and riveted boilers, have come to a satisfactory arrangement with their welders, so that the strike is now over. All orders can be promptly executed.

**Ancoats Building Disaster.**—At the Manchester City Police Court on Wednesday last the magistrate dismissed the charge of manslaughter against Warnes, the agent of the property in Henley Street which collapsed, suffocating two little girls.

**The Heston Schools, Isleworth,** are being warmed and ventilated by means of Shorland's patent Manchester stoves with descending smoke flues and patent Manchester grates, supplied by Messrs. E. H. Shorland & Brother, of Manchester.

**The Old Gaiety Theatre.**—The floors, panelled doors, partitioning, lead and other materials of the Old Gaiety Theatre in the Strand were sold last week by public auction. Competition was keen. The stage went for £21, the brickwork for £67 and the ironwork for £135.

**The Limerick Building Trade.**—At last week's meeting of the Limerick Chamber of Commerce a resolution was passed deploring the narrow and short-sighted policy of trades societies in the town as tending to interfere with the industrial progress of Limerick, and appealing to the opinion of the working classes and the public generally for the adoption of broader and more public-spirited views.

**Workmen's Compensation Act Amendment.**—A question was asked in the House of Commons last week as to the liabilities of employers in cases of accidents to workmen on buildings less than 30ft. high. This limit is fixed by the Workmen's Compensation Act, 1897, but not by the Employers' Liability Act. The Home Secretary stated that the matter will receive attention in connection with the amendment of the Act which the Government have under consideration.

**Cardiff Painters and the Corporation.**—At last week's meeting of the Cardiff Town Council a letter was read from the secretary of the local operative painters' society asking the corporation to fall into line with other employers in the town by advancing the wages of painters in their employ by ½d. per hour. The council was also asked to adopt the new rules which had been approved by a majority of the masters and their employees. —The consideration of the matter was deferred, so that the members should have an opportunity of seeing the new rules

**German Chimney Construction.**—In Germany tall-chimney builders are now using a mortar composed of a mixture of cement, lime and sand (in the proportions 1, 2 and 6) for the upper portion of the chimney stack, where the gaseous products of combustion of the fuel are comparatively cool; while for the lower portion of the stack the proportions are 1, 2½ and 8. If the lime is hydraulic the proportion of the cement may be reduced; but if the sand is very sharp the proportion of cement must be increased. For the cap of a tall chimney stack the proportions of the ingredients of the mortar may be altered with economy and advantage. In German practice the mortar is composed of cement, lime and sand; in the proportions of 1, 1 and 4. Mortar made of cement and sand alone is not at all suitable for tall chimney work, because it does not resist the action of heat well and is attacked by carbon dioxide, of which there is always a large quantity present in the flue gases; this is especially the case in the presence of moisture, and, of course, steam is always present in the gases found in a smoking chimney.

# Trade and Craft.

### The Ellkay Bathroom.

The "Ellkay" bathroom should not be confused with cabinet baths and similar articles on the market. It has been designed to meet the greatly-felt want of a full-size plunge bath with hot and cold water and waste attachment occupying only a minimum of space. Not only is the great saving of space an essential point in connection with the invention, but there is the invaluable convenience of having a full-size plunge bath at hand in one's own room, fixed up in a very sightly and highly sanitary manner, every part of the bath inside and outside being available for cleaning, and the whole arrangement so enclosed that it has the appearance of a wardrobe. Thus the "Ellkay" removes the necessity of giving up a separate room for bathing accommodation, as it can be fixed in any room, the inside measurements being only—height 6ft., width 2ft. 7in., depth 1ft. 11in. Moreover, by means of these "bathrooms" two or more full-sized baths can be accessible in places of limited accommodation where only one bath is now possible—and that at the cost of a separate room. The "Ellkay" baths are not make-shifts. The ordinary pattern is formed of the very best steel, lead coated and enamelled inside and out; but the baths are also made of steel with a 10 per cent. thickness of copper inside, of steel with 10 per cent. nickel polished inside, of pure copper polished inside, and of pure nickel polished inside. The makers are the Ellkay Patent Bath Syndicate, Ltd., of Orchard Street, Victoria Street, Westminster, S.W.

### Iron Staircases.

A new catalogue of iron staircases, doors, verandahs, balconies, roofs, &c., has just been issued by the St. Pancras Ironwork Co., Ltd., of 171, St. Pancras Road, London, N.W. It is very fully illustrated from drawings and photographs. Designs for all kinds of iron staircases are shown. Some of the newer illustrations show the fire-escape stairs which the company has erected at University College Hospital, the Foundling Hospital and King's College Hospital, London, the Euston and Berkeley Hotels, the St. Pancras Infirmary, Royal School for Officers' Daughters at Lansdown, Bath, the Welsbach Co.'s factory at Wandsworth, Wills's tobacco factory at Bristol, and a fine glazed and covered stairs at Messrs. Burroughes, Wellcome & Co.'s factory at Dartford. These stairs are a speciality of the firm, who have spared no pains in obtaining the best and most economical designs to meet the requirements of the London County Council and other authorities. A great deal of iron roof work is also done by the company, as well as such interior ironwork as lift enclosures, landings, &c. The treads of stairs are necessarily of great importance. A new patent tread is now being introduced by the St. Pancras Ironwork Co. It consists of a slab 1½in. thick, made of steel embedded in concrete, on the wearing surface of which is a series of lead rings. The slabs are made 10in. from back to front and 12in. wide, and half slabs 6in. wide. They drop into a rebate at the top and bottom of the adjoining risers, and the front edge is protected by an iron nosing. The slabs are very strong, and even if some excessively heavy weight fell on them would crack rather than break. They are well adapted for use on wood or stone steps, and enable a worn-out or slippery staircase to be rendered new and safe at a moderate cost. The price is 10d. per ft. run 10in. going, above the price of ordinary iron treads with risers. Separate slabs 12in. by 10in. cost 2s. each, and half slabs 1s. 6d.

# Current Market Prices.

### FORAGE.

| | | £ | s. | d. | £ | s. | d. |
|---|---|---|---|---|---|---|---|
| Beans | per qr. | 1 | 12 | 0 | 1 | 19 | 0 |
| Clover, best | per load | 4 | 7 | 6 | 4 | 15 | 0 |
| Hay, best | do. | 3 | 15 | 0 | 4 | 10 | 0 |
| Sanfoin mixture | do. | 3 | 15 | 0 | 4 | 5 | 0 |
| Straw | do. | 1 | 10 | 0 | 2 | 2 | 0 |
| **OILS AND PAINTS.** | | | | | | | |
| Castor Oil, French | pet cwt. | 1 | 1 | 10 | 1 | 2 | 2 |
| Colza Oil, English | do. | 1 | 4 | 0 | | — | |
| Copperas | per ton | 2 | 2 | 6 | | — | |
| Lard Oil | per cwt. | 2 | 15 | 0 | 2 | 17 | 0 |
| Lead white, ground, carbonate | do. | 1 | 4 | 10 | | — | |
| Do red | do. | 1 | 0 | 4½ | | | |
| Linseed Oil, barrels | do. | 1 | 0 | 0 | | - | |
| Petroleum American | per gal. | 0 | 0 | 5⅞ | 0 | 0 | 6 |
| Do Russian | do. | 0 | 0 | 4⅝ | 0 | 0 | 4¾ |
| Pitch | per barrel | 0 | 8 | 0 | | — | |
| Shellac, orange | per cwt. | 7 | 17 | 0 | | — | |
| Soda, crystals | per ton | 3 | 2 | 6 | 3 | 5 | 0 |
| Tallow, Town | per cwt | 1 | 5 | 6 | 1 | 6 | 6 |
| Tar, Stockholm | per barrel | 1 | 0 | 6 | | — | |
| Turpentine | per cwt. | 2 | 0 | 9 | | — | |
| **METALS.** | | | | | | | |
| Copper, sheet, strong | per ton | 71 | 0 | 0 | | — | |
| Iron, Staffs., bar | do. | 6 | 15 | 0 | | — | |
| Do Galvanised Corrugated sheet | do. | 11 | 0 | 0 | 11 | 2 | 6 |
| Lead, pig, Soft Foreign | do. | 11 | 2 | 6 | | — | |
| Do. do. English common brands | do. | 11 | 17 | 6 | | — | |
| Do. sheet English 3lb. per sq. ft and upwards | do. | 14 | 0 | 0 | | — | |
| Do. pipe | do. | 15 | 0 | 0 | | — | |
| Nails, cut clasp, 3in to 6in. | do. | 9 | 5 | 0 | | — | |
| Do. floor brads | do. | 9 | 0 | 0 | | — | |
| Steel, Staffs., Girders and Angles | do. | 5 | 15 | 0 | 6 | 10 | 0 |
| Do. do. Mild bars | do. | 6 | 7 | 6 | 7 | 2 | 6 |
| Tin, Foreign | do. | 128 | 5 | 0 | 128 | 15 | 0 |
| Do. English ingots | do. | 128 | 10 | 0 | 129 | 10 | 0 |
| Zinc, sheets, Selesian | do. | 23 | 5 | 0 | | - | |
| Do. do. Vielle Montaigne | do. | 23 | 10 | 0 | | — | |
| Do. Spelter | do. | 20 | 5 | 0 | 20 | 7 | 6 |
| **TIMBER.** | | | | | | | |
| Soft Woods. | | | | | | | |
| Fir, Dantzic and Memel | per load | 1 | 13 | 0 | 3 | 0 | 0 |
| Pine, Quebec, Yellow | do. | 5 | 5 | 0 | 6 | 5 | 0 |
| Do. Pitch | do. | 2 | 12 | 0 | 3 | 3 | 0 |
| Laths log, Dantzic | per fath. | 4 | 10 | 0 | 5 | 10 | 0 |
| Do. Petersburg | do. | 7 | 5 | 0 | | — | |
| Deals, Kovda, 3rd Yell. 3×9 | per load | 13 | 15 | 0 | | — | |
| Do. Sundsvall, Yellow, 5th, 3×9 | do. | 4 | 10 | 0 | | — | |
| Do. Miramichi, Spruce, 1st, 3×7 | do. | 7 | 15 | 0 | | — | |
| Do. do. do. 2nd, 3×5 | do. | 7 | 15 | 0 | | — | |
| Do. do. do. 3rd, 3×7 | do. | 7 | 15 | 0 | | — | |
| Do. Dalhousie, Unsorted Spruce, 3×7 | do. | 7 | 15 | 0 | | — | |
| Do. Umba, Dry Yellow, 2nd, 3×11 | do. | 15 | 15 | 0 | | — | |
| Do. Ljusne, Yellow, 4th, 2½×7 | do. | 10 | 10 | 0 | | — | |
| Do. Onega, White, 3rd, 3×11 | do. | 9 | 5 | 0 | | — | |
| Do. do. do. do. 3×9 | do. | 9 | 5 | 0 | | — | |
| Do. Narva, White, 4th, 3×11 | do. | 6 | 17 | 6 | | — | |
| Do Bonaventure River, Unsorted Spruce 3×11 | do. | 8 | 15 | 0 | | — | |
| Do. do. do. 3×7 | do. | 7 | 10 | 0 | | — | |
| Do. Archangel, Yellow, 4th, 3×9 | do. | 10 | 10 | 0 | | — | |
| Do. Gefle and Sardarne, Yellow, 5th, 3×9 | do. | 11 | 5 | 0 | | — | |
| Do. Munksund, Yellow, 1st, 2½×7 | do. | 10 | 15 | 0 | | — | |
| Do. do. do. 2nd, 2½×7 | do. | 10 | 15 | 0 | | — | |
| Do. do. do. 1st, 2½×7 | do. | 11 | 0 | 0 | | — | |
| Do. do. do. 2nd, 2½×7 | do. | 11 | 0 | 0 | | — | |
| Do. Galatz, White, 1st, 3×9 | do. | 8 | 5 | 0 | | — | |
| Do. Norrköping, Unsorted Yellow, 3×8 | do. | 9 | 0 | 0 | | — | |
| Do. Räfsö, Yellow, 4th, 3×11 | do. | 8 | 10 | 0 | | — | |
| Do. do. White, 4th, 2½×7 | do. | 9 | 0 | 0 | | — | |
| Do. Kirt, Dry Yellow, 2nd, 3×9 | do. | 16 | 15 | 0 | | — | |
| Do. Galatz, White, 1st, 3×11 | do. | 8 | 15 | 0 | | — | |
| Do. Burnt Bab Pine, Yell. 2nd, 3×11 | do. | 15 | 0 | 0 | | — | |
| Do. Quebec, Spruce, 2nd, 3×9 | do. | 10 | 15 | 0 | | — | |
| Do. do. do. 3rd, 3×9 | do. | 10 | 10 | 0 | | — | |
| Do. do. do. 5th, 3×9 | do. | 8 | 0 | 0 | | — | |
| Do. do. do. Course, 3rd, 2½×11 | do. | 7 | 15 | 0 | | — | |
| Do. Montreal, Yellow, 4th, 3×11 | do. | 10 | 0 | 0 | | — | |
| Do. Quebec, Yellow Pine, 1st, 3×11 | do. | 28 | 10 | 0 | | — | |
| Battens, all kinds | do. | 6 | 5 | 0 | 16 | 10 | 0 |
| Flooring Boards 1in. prepared, 1st | per square | 0 | 10 | 6 | 0 | 12 | 3 |
| Do. 2nd | do. | 0 | 8 | 9 | 0 | 11 | 3 |
| Do. 3rd &c. | do. | 0 | 9 | 3 | 0 | 10 | 9 |
| Hard Woods. | | | | | | | |
| Ash, Quebec | per load | 3 | 12 | 6 | | — | |
| Birch, Quebec | do. | 3 | 12 | 6 | 3 | 17 | 6 |
| Box, Turkey | per ton | 15 | 0 | 0 | 20 | 0 | 0 |
| Cedar, Cuba | per ft. sup. | 0 | 0 | 5¼ | | — | |
| Do. Honduras | do. | 0 | 0 | 5 31/32 | | — | |

# Electrical Notes.

**The Belfast Electric-Lighting Mains** are to be extended to the suburbs of Knock and Sydenham. The extension will cost about £8,300.

**The Burton-on-Trent Tramways** are now in full operation. Up to the present the cost has been about £80,000. There are 5¾ miles of track, about half of which is double, and twenty cars costing £550 each.

**Baker Street and Waterloo Railway.**—The capital expenditure during the half-year ended June 30th last amounted to £143,513. The expenditure during the current six months is estimated at £250,000. The construction of the works has proceeded satisfactorily.

**The Electrical Work at the Newcastle Royal Victoria Infirmary**, now in course of erection, is being carried out by Messrs. Falconar, Cross & Co., of Newcastle. The contract includes the whole of the lighting and power distribution, and also electric bells, telephones, fire-alarms and fans.

**Wolverhampton Electric Lighting.**—The town council of Wolverhampton have decided to fix the price of energy for lighting purposes at 5d. per unit, on a maximum demand for an average of 1⅓ hours per day, and 2½d. per unit for all energy consumed in excess. This reduction of 15 per cent. takes place from October 1st next.

**A new Electricity Generating Station** at Bradford was recently opened. It is estimated that, when completed, the building and plant will represent an outlay of about £140,000. The scheme of the electricity department includes the extension of the building now opened for the accommodation of five other engines, and when this is done a total horse-power of about 20,000 will be available. The new station is in Valley Road.

**Electricity for a Seaside Resort.**—A company has been formed to provide a supply of electricity for lighting and power purposes at Milford-on-Sea, which is situate on the Hampshire coast not far from Lymington. The motive power will be obtained from gas-engines, and as there is no public supply of gas, producer gas will be used. The contractors are Messrs. Christy Brothers & Middleton, and the consulting engineer is Mr. L. Alwyn, of London.

**Fires from Electricity.**—In a recent paper on electrical fire hazards Mr. Washington Devereux reduces these to three causes, as follows:—(1) Short circuit—a current of low resistance—in which the current is hindered from reaching the end of its course, and from which no benefit is derived; (2) a leak, in which the current takes a wrong or an undesirable course; (3) the contact with parts which have become heated by the flow of current which at the time of heating may be a part of the circuit from the source of supply to the consuming device. The great problem is now to secure safety, and this may be answered by the proper methods of construction, using only high-grade material. Evidences of the lack of knowledge on electrical subjects are quite apparent—nails and screws driven into electric-light moulding, wires in contact with foreign metallic objects, fuses uncovered so that molten metal may fly about among inflammable material, and conductors so overloaded as to be perceptibly hot. The fire hazard should be always carefully considered in an electrical installation. A system of electric wiring may be ideal from an engineering point of view, and yet as a fire hazard may be most dangerous. Under skilled workmen, however, who know what conditions should be observed, and observe them, "electricity is as safe as any source of power, and the safest source of light known to mankind."

The Editors of The Builders' Journal, in response to many repeated requests by students and others, have compiled the following list of the most suitable books published on the various subjects which appertain to architecture and the building trades. Special arrangements have been made to enable readers to be supplied with books at the published prices, *post free*. An endeavour will be made to obtain for regular readers and subscribers any other Technical Books not in this or succeeding lists, and these will also be forwarded to them post free. The names given in brackets are those of the authors or editors of the respective books.

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| " 25 | Nuneaton—Infirmary and Laundry | Guardians | H. Quick, 64 Hertford Street, Coventry. |
| " 26 | Portadown, Ireland—Additions, &c., to Church | — | J. C. Hunter, Scottish Provident Buildings, Portadown. |
| " 26 | Troedyrhiw—School | Merthyr Tydfil School Board | J. Ll. Smith, Board's Architect, Aberdare. |
| " 26 | Leicester—Enlargement of Head Post-Office | Commissioners of H.M. Works, &c. | Secretary, H.M. Office of Works, Storey's Gate, S.W. |
| " 27 | Halifax—Administrative Block | Guardians | W. C. Williams, 29 Southgate, Halifax. |
| " 27 | Goldthorpe, Yorks—School, &c. | School Board | R. Higginbottom, Thurnscoe, Rotherham, and W. H. Wagstaff, Saltergate, Chesterfield. |
| " 27 | Halifax—Warehouse, &c. | — | Jackson & Fox, Architects, Rawson Street, Halifax. |
| " 29 | Drogheda, Ireland—Cycle Works, &c. | P. J. Fulham | F. H. Tallan, 356 Kildare Street, Dublin. |
| " 31 | New Malden—Offices, &c. | Maldens and Coombe U.D.C. | W. Hope, Architect, Seymour Road, Hampton Wick. |
| " 31 | Bristol—Warehouses | Docks Committee | W. W. Squire, Engineer, Underfall Yard, Cumberland Rd., Bristol |
| " 31 | Turnberry, Glasgow—Hotel | Glasgow & South Western Rly. | J. Miller, 15 Blythewood Square, Glasgow. |
| " 31 | Burton-in-Lonsdale, Kirkby Lonsdale—School, &c. | Trustees | R. Richardson, Halfway House, Cantsfield, Kirkby Lonsdale. |
| " 31 | Guildford—Underground Convenience | Town Council | C. G. Mason, Borough Surveyor, Tunsgate, Guildford. |
| Sept. 3 | Bermondsey—Offices, &c., at Town Hall | Borough Council | R. J. Angel, Borough Surveyor, Town Hall, Spa Road, S.E. |
| " 4 | Culver Cliff, near Sandown, Isle of Wight—Coastguard Buildings. | Admiralty | Superintending Engineer, H.M. Dockyard, Portsmouth. |
| " 4 | Barry Docks—Mercantile Marine Office | Commissioners of H.M. Works, &c. | Secretary, H.M. Office of Works, &c., Storey's Gate, S.W. |
| " 4 | Batley—Town Hall Extensions | Corporation | W. Hanstock & Son, Architects, Branch Road, Batley. |
| " 8 | Cannock, Staffs—Laundry Alterations | Guardians | A. Veall, 84 Darlington Street, Wolverhampton. |
| " 8 | Bermondsey—Extension of Buildings, &c. | Borough Council | R. J. Angel, Borough Surveyor, Town Hall, Spa Road, S.E. |
| " 14 | Penygraig, Wales—Departments for Boys and Girls | Ystradyfodwg School Board | J. Rees, Hillside Cottage, Pentre |
| " 14 | Pontypridd—Public Offices | Urban District Council | H. T. Hare, 13 Hart Street, London, W.C. |
| " 14 | Hemsworth—Fifteen Houses | — | J. Simmons, Hague Lane, Hemsworth. |
| " 14 | Westgate—Rebuilding Hotel | — | J. Jackson, Architect, Barry Street, Bradford. |
| " 14 | Leeds—Five Houses, &c. | F. Terry | W. M. Coggill, Architect, Stourton, Hunslet. |
| " 14 | Nottingham—School | School Board | F. B. Lewis, Architect, Barry Street, Bradford. |
| " 14 | Bramhope—House | — | Child & Co., 149 Park Lane, Leeds |
| " 14 | Woodhouse—Club Premises | North-West Ward, Liberal Asso | T. A. Buttery and S. B. Birds, 1 Basinghall Square, Leeds. |
| " 14 | Whitby—Additions to Brewery | R. D. Spaven & Co. | H. G. Walker, Architect, Skinner Street, Whitby. |
| " 14 | Thurles—Residence | — | W. Maher, Main Street, Thurles. |
| " 14 | Glyncorrwg—Four Houses | — | D. Lewis, Glyncorrwg. |
| " 14 | Winfrith—Alterations to House | E. Hughes | F. R. Bates, Architect, Newport, Mon. |
| " 14 | Bishop Auckland—Minister's House | — | T. E. Davidson, Architect, Newcastle-on-Tyne. |
| " 14 | Hereford—Repository | Greenland's, Ltd. | W. W. Robinson, Architect, King Street, Hereford. |
| " 14 | Brampton—Residence | — | Rev. T. W. Willis, Lanercost Vicarage, Brampton. |
| " 14 | Salford—School | — | L. C. Evans, Town Clerk, Town Hall, Salford. |
| " 14 | Wimbledon—Two Blocks of Flats | Soldiers' and Sailors' Fam. Assoc. | C. E. L. Parkinson, 44 Bedford Row, W.C. |
| " 14 | Colchester—Wesleyan Church and School | — | Coodey & Cressall, Architects, Victoria Chamber, Colchester. |
| " 14 | Macclesfield—Shop | Equitable Provident Society | J. Wright, Architect, Macclesfield. |
| " 14 | Bingley—Detached Residence | — | E. H. Parkinson, Architect, Old Branch Chambers, Bradford. |
| " 14 | Longfleet—Infirmary Buildings at Workhouse | — | H. F. J. Barnes, Architect, Poole. |
| " 14 | Leeds—Additions to Council School | Education Committee | W. S. Braithwaite, Architect, Calverley Street, Leeds. |
| " 14 | Keswick—Reslating Inn and Cottage | — | Jennings Brothers, Ltd., Castle Brewery, Cockermouth. |
| " 14 | Hull—Villa | — | J. M. Dossor, 2 Manor Street, Hull. |
| " 16 | Birmingham—Boiler House, &c. | Corporation | Mansergh & Sons, 5 Victoria Street, Westminster, S.W. |
| " 17 | Preston—Power Station, &c. | Corporation | W. H. Tittensor, 25 Burrow Road, Preston. |
| " 17 | Wern, Salop—Market House and Assembly Hall | Urban District Council | J. Brown, 12 Castle Street, Shrewsbury. |
| | **ENGINEERING:** | | |
| Aug. 20 | Emden, Belgium—Four Dredger Boats | Königliche Wasserbau Inspection | M. Van Jindelt, Bausecretär, Emden. |
| " 20 | Gerona, Spain—Telephone System | — | Directorate-General of Posts and Telegraphs, Carretas 10, Madrid. |
| " 20 | Uxbridge—Ventilation, Water-supply, &c., Works | Joint Hospital Board | J. F. Stow, Engineer, Corn Exchange, Uxbridge. |
| " 21 | Chartham Downs, Canterbury—Extension of Fire Mains | Asylums Committee | W. J. Jennings, 4 St. Margaret Street, Canterbury. |
| " 21 | Rotherham—Boiler | Sewerage Committee | R. E. W. Berrington, Engineer, Bank Buildings, Wolverhampton. |
| " 21 | West Ham—Traction Switchboard, &c. | Town Council | J. K. Bock, Engineer, Abbey Mills, West Ham. |
| " 22 | North and South Shields—Floating Landing Stages | Tyne Improvements Commissioners. | R. Urwin, Secretary, Bewick Street, Newcastle-on-Tyne. |
| " 22 | Newton-in-Makerfield—Ferro-concrete Reservoir | Urban District Council | C. Cole, Clerk, Town Hall, Earlestown, Lancs. |
| " 22 | Avila, Spain—Electric Power Plant | — | Secretariat of the "Ayuntamiento," Avila, Spain. |
| " 22 | Leigh, Lancs—Water Main | Gas and Water Committee | J. Gibson, Engineer, Leigh, Lancs |
| " 22 | King's Heath, near Birmingham—Tramway | Urban District Council | A. W. Cross, 23 Valentine Road, King's Heath |
| " 24 | Macclesfield—Laundry Machinery | Guardians | Whittaker & Bradburn, 19 King Edward Street, Macclesfield. |
| " 24 | Highworth, near Swindon—Waterworks | Rural District Council | F. Bedman, 34 Wood Street, Swindon. |
| " 24 | Llanrwst, Wales—Extension of Water Mains | Rural District Council | R. R. Owen, Clerk, Union Offices, Llanrwst. |
| " 24 | Manchester—Weighbridge, &c. | Electricity Committee | City Surveyor, Town Hall, Manchester. |
| " 24 | Canea, Turkey—Electric Lighting | — | Municipality, Canea, Crete, Turkey. |
| " 25 | London, S.W.—Locomotive Boilers | Indian State Railways | Directorate-General of Stores, India Office, Whitehall, S.W. |
| " 25 | Clutton—Waterworks | Rural District Council | W. F. Bird, Engineer, Midsomer Norton, near Bath. |
| " 25 | Portsmouth—Sewer, &c. | Corporation | Borough Engineer, Town Hall, Portsmouth. |
| " 26 | Abergavenny—Carburetted Water-Gas Plant | Town Council | Manager, Gasworks, Abergavenny. |
| " 26 | Burnley—Sewage Tanks | Corporation | G. H. Pickles, Borough Surveyor, Town Hall, Burnley. |
| " 26 | Lynton, Devon—Waterworks | Urban District Council | W. H. Chowins, Council's Engineer, Town Hall, Lynton. |
| " 26 | Portsmouth—Ventilating Gratings, &c. | Guardians | Rake & Cogswell, Architect, Prudential Blds., Commercial Road, Portsmouth. |
| " 26 | Swindon—Permanent-way Materials | Corporation | Lacey & Sillar, 78 King Street, Manchester. |
| " 26 | Charleroi-Nalinnes, Belgium—Railway | Société Nationale des Chemins de Fer Vicinaux. | Director-General, 14 Rue de la Science, Brussels. |
| " 28 | Apulia, Italy—Aqueduct | — | Commercial Intelligence Branch, Board of Trade, 50 Parliament Street, S.W. |
| " 29 | Devonport—Gasholder | Corporation | S. E. Stevenson, Engineer, Gasworks, Devonport. |
| " 29 | Kempston—Waterworks | Urban District Council | Beesley, Son & Nichols, 11 Victoria Street, Westminster, S.W |

# Complete List of Contracts Open —*continued*

| DATE OF DELIVERY. | WORK TO BE EXECUTED. | FOR WHOM. | FROM WHOM FORMS OF TENDERS MAY BE OBTAINED. |
|---|---|---|---|
| | **ENGINEERING**—*cont.* | | |
| Aug. 31 | Belfast—Graving Dock | Harbour Commissioners | G. F. L. Giles, Engineer, Harbour Office, Belfast. |
| " 31 | Aberdeen—Quay Widening | Harbour Commissioners | R. G. Nicol, Engineer, Aberdeen. |
| " 31 | London, N.E. Arc Lamps, &c. | Hackney Borough Council | R. Hammond, 54 Victoria Street, Westminster, S.W. |
| " 31 | Ennis—Water Supply | Management Committee | J. Enright, Clerk, Asylum Board Room, Ennis. |
| Sept. 1 | Hounslow—Fire Engine | Urban District Council | H. J. Baker, Clerk, Town Hall, Hounslow. |
| " 1 | Southampton—Pumping Engines | Corporation | J. A. Crowther, 123 High Street, Southampton |
| " 2 | Corrientes—Waterworks | —— | Engineer-in-Chief, Rividavia 1,255, Buenos Aires. |
| " 3 | Aston, Birmingham—Reconstructing Tramways | Urban District Council | R. Green, 37 Waterloo Street Birmingham. |
| " 8 | Dixmude-Ypres-Paperinghe—Railway | Société Nationale des Chemins de Fer Vicinaux. | Director-General, 14 Rue de la Science, Brussels. |
| " 12 | Sydney—Electric Tramway Generating Set | Railway Commissioners | Agent-General for New South Wales, 9 Victoria Street, S.W. |
| " 20 | London, W.—Sweeping Machine | Paddington Borough Council | E. B. B. Newton, Borough Surveyor, Town Hall, Paddington W. |
| " 22 | Jassy, Roumania—Waterworks | Corporation | Mayor, Jassy, Roumania |
| " 23 | Estremoz-Castello de Vide—Railway | Portugal State Railways | Sessions Hall, Council of Administration of State Rlys., Lisbon. |
| " 28 | Launceston Tasmania—Electric Meters | —— | J. Terry & Co., 7 Great Winchester Street, E.C. |
| Oct. 1 | Utrecht, Netherlands—Electricity Supply Station | Town Council | Gemeente-Secretaire of Utrecht. |
| " 6 | London, S.E.—Steam Engines | London County Council | County Hall, Spring Gardens, S.W. |
| " 6 | Vauxhall—Steel Superstructure and Granite Piers of Bridge | London County Council | Engineer's Department, County Hall, Spring Gardens, S.W. |
| " 30 | Marina, Upper Barracca, Malta—Lift | Crown Agents for the Colonies | Receiver-General and Director of Contracts, Valletta, Malta. |
| Dec. 15 | Los Andes, Chili—Railway | —— | Commercial Intelligence Branch, Board of Trade, 50 Parliament Street, S.W. |
| 1904. Feb. 1 | Cairo—Three Road Bridges over Nile | Ministry of Public Works | Commercial Intelligence Branch, Board of Trade, 50 Parliament Street, S.W. |
| No date. | Nottingham—Lancashire Boiler at School | Guardians | G. M. Howard, Clerk, Shakespeare Street, Nottingham. |
| " | Rochford, Essex—Boiler | —— | J. Featherby, Bishop's Stortford, Essex. |
| | **FURNITURE:** | | |
| Aug. 23 | Burnley—Furnishing Schools | —— | A. J. Shaw & T. H. Vowles, Architects, Mercantile Chmbrs., Burnley. |
| No date. | Pudsey—Reseating Chapel | —— | Danby & Simpson, 10 Park Row, Leeds. |
| | **IRON AND STEEL:** | | |
| Aug. 22 | Largo de San Roque, Portugal—Iron Rails | South and South-Western State Railways. | Commercial Intelligence Branch, Board of Trade, 50 Parliament Street, S.W. |
| " 25 | Nelson—Steelwork for Clock Tower | General Purposes Committee | B. Ball, Borough Engineer, Nelson. |
| Sept. 9 | Leicester—Roofs to Engine and Boiler Houses | Corporation | E. G. Mawbey, Borough Surveyor, Town Hall, Leicester. |
| No date. | Cardiff—Wrought-iron Pipes | —— | United National Collieries, Ltd., 20 Exchange, Cardiff. |
| | **PAINTING AND PLUMBING:** | | |
| Aug. 20 | Uxbridge—Oil | Rural District Council | J. F. Stow, Engineer, Corn Exchange, Uxbridge. |
| " 20 | Wandsworth—Painting Infirmary, &c. | Guardians | F. W. Piper, Clerk, Union Offices, St. John's Hill, S.W. |
| " 20 | Copenhagen, Denmark—Oils, Varnish, &c. | Danish State Railways | Chief, Locomotive Department, Danish State Rlwys., Copenhagen. |
| " 21 | Leeds—Painting, &c., at Infirmary | Guardians | J. H. Ford, Clerk, Poor Law Offices, Leeds. |
| " 22 | Cheltenham—Lead | Corporation | J. S. Pickering, Boro' Water Engr., Municipal Offices, Cheltenham |
| " 25 | Pershore, Worcs—Painting Bridge | Rural District Council | W. Bullock, Council's Surveyor, Wick, Pershore. |
| " 26 | Northfleet, Kent—Painting | Urban District Council | Mr. Honeycombe, District Surveyor, Council Offices, Northfleet. |
| " 27 | Halifax—Block at Gibbet Street Workhouse | —— | W. Clement Williams, F.R.I.B.A., 29 Southgate, Halifax. |
| No date. | Swansea—Smallpox Hospital, Garngoch Common | Rural District Council | T. Trevor Williams, Surveyor, Alexandra Road, Swansea. |
| " | Morley—Market Hall | —— | W. H. Jowett, Craig Vale House, Morley. |
| " | Wombwell—Six Houses | Mrs. E. Bashford | A. B. Linford, Architect, Carlton Villa, Wombwell. |
| | **ROADS AND CARTAGE:** | | |
| Aug. 21 | Tatam Brow, Pootle, Cumberland—Diverting Highway | Rural District Council | J. Clark, Clerk, Broughton-in-Furness. |
| " 22 | Tredegar, Mon.—Limestone | Bidwellty U.D.C. | J. H. Lewis, Surveyor, Pengam, Cardiff. |
| " 24 | Bushey, Herts—Widening, &c. | Hertfordshire C.C. | U. A. Smith, 41 Parliament Street, Westminster, S.W. |
| " 24 | Stamford—Private Street Works | Corporation | T. W. Hayward 8 St. Mary's Street, Stamford. |
| " 24 | Stevenage—Levelling, &c. | Urban District Council | W. O. Times, Clerk, Council Offices, Orchard Road, Stevenage. |
| " 25 | Farnham—Granite | Urban District Council | R. W. Cass, Council's Surveyor, Council Buildings, Farnham. |
| " 26 | Ramsgate—Street Works | Corporation | T. G. Taylor, Borough Engineer, Albion House, Ramsgate. |
| " 28 | Sidmouth—Widening Turnpike, Roads, &c. | Urban District Council | R Lake, Surveyor, Council Offices, Sidmouth. |
| " 31 | Kettering—Streets, &c. | Urban District Council | T. R. Smith, Council's Surveyor Market Place, Kettering |
| " 31 | Farnborough—Materials, &c. | Urban District Council | J. E. Hargreaves, Surveyor, Town Hall, Farnborough. |
| Sept. 2 | Esher—Making-up Street | Urban District Council | E A. Everett, Clerk Portsmouth Road, Thames Ditton. |
| " 2 | Claygate—Making-up Road | Urban District Coouncil | E. A. Everett, Clerk, Portsmouth Road, Thames Ditton. |
| " 8 | Barking, Essex—Making-up, &c. | Urban District Council | C. F. Dawson, Council's Surveyor, Public Offices, Barking. |
| " 21 | Paddington—Making-up and Paving Roads | Borough Council | E. B. B. Newton, Borough Surveyor, Town Hall, Paddington, W. |
| No date. | Liscard and Wallasey—Roads and Sewers | Palmerston Land Co., Ltd. | O. Roberts, Architect, Dale Street, Liverpool. |
| " | Birmingham—Tramway Materials | Tramways Committee | J. Price, City Engineer, Council House, Birmingham. |
| " | Huddersfield—Whinstone | —— | A. Graham & Sons, Contractors, Huddersfield. |
| | **SANITARY:** | | |
| Aug. 21 | Coventry—Pipes | Corporation | J. E. Swindlehurst, City Engineer, St. Mary's Hall, Coventry. |
| " 21 | Hull—Nightsoil Collection | Corporation | Inspector of Nuisances, Hanover Square, Hull. |
| " 24 | Burnham-on-Crouch, Essex—Scavenging | Urban District Council | E. Dilliway, Clerk, Burnham-on-Crouch. |
| " 24 | Worcester—Sewage-Disposal Works | Corporation | Beesley, Son & Nichols, 11 Victoria Street, Westminster, S.W. |
| " 25 | Portsmouth—Sewer, &c. | —— | Borough Engineer, Town Hall, Portsmouth. |
| " 26 | London, W.—Drainage Works at West Brompton Workhouse | Guardians | E. T. Hall, 54 Bedford Square, W.C. |
| " 26 | Strood, Kent—Storm-Water Drainage Works | Rural District Council | W Brooke, Surveyor, Council Offices, Strood. |
| " 31 | Aylesbury—Sewage-Disposal Works | Urban District Council | G. Chatterton, 6 The Sanctuary, Westminster, S.W. |
| " 31 | Guildford—Underground Convenience | Town Council | C. G. Mason, Borough Surveyor, Tuns Gate, Guildford |
| Sept. 1 | Windsor—Removal of Refuse | Town Council | Town Clerk, 3 Park Street, Windsor. |
| " 2 | Thames Ditton—Sewers &c. | Urban District Council | E. A. Everett, Council Offices, Portsmouth Road, Thames Ditton. |

# List of Competitions Open.

| DATE OF DELIVERY. | DESIGNS REQUIRED. | AMOUNT OF PREMIUM. | DEPOSIT REQUIRED FOR CONDITIONS, &c. | BY WHOM ADVERTISED. |
|---|---|---|---|---|
| Aug. 31 | Blackpool—New Offices | —— | £1 1s. | C. Arthur, 34 Victoria Street, Blackpool. |
| Sept. 12 | Stonehaven, Scotland—Alterations and Additions to Town Hall. | —— | —— | G. Murdoch, Borough Surveyor, Stonehaven. |
| " 12 | Howden, Yorks—Sewerage Improvement | £15 and commission. | —— | H. Green, Clerk, Council Offices, Howden. |
| " 14 | Heywood—Library | £30, £20, £10. | —— | J. A. Settle, Borough Engineer, Municipal Buildings, Heywood. |
| " 22 | Ayr—Hospital, &c. | —— | —— | J. E. Shaw, Clerk, Lunacy Board, County Buildings, Ayr. |
| " 26 | Leyland, Lancs—Laying-out Land, &c. | £15 15s. | —— | M. H. Wilkinson, 21 Towngate, Leyland. |
| " 30 | Dublin—Workmen's Cottages | £20. | —— | F. B. Ormsby, Secretary, Kingsbridge Terminus, Dublin |
| Oct. 2 | Bromley, E.—Public Library | £75, £25. | 10s. 6d. | H. Heckford, Borough Surveyor, Council Offices, High Street, Poplar. |
| " 12 | Rawtenstall—Free Library, &c. | £100, £50, £30. | £2. | A. W. Lawson, Borough Surveyor, Municipal Offices, Rawtenstall. |
| Nov. 9 | Brighton—Hospital | £50, £30, £20. | £1 1s. | L. Holmes, 76 West Street, Brighton. |
| 1904 Mar. 31 | Vienna—Machinery to Lift Boats on Canal | 100,000, 75,000 and 50,000 kronen. | —— | Austro-Hungarian Consulate-General, 22 Laurence Pountney Lane, E.C. |
| No date | Gillingham—School | —— | —— | E. T. Atchison, 8 Waterloo Road, New Brompton, Kent. |
| " | Aylesford, Kent—Stone Bridge | 1st premium, 100 guineas. | —— | Town Clerk, Maidstone. |

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HOT WATER FITTER'S MATE wants Work; good, strong; age 20; knowledge of smithing.—A. D., 89, Denmark Road, West Kilburn.

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ARCHITECTS, BUILDERS, &c.—Tracings neatly executed and Specifications accurately typewritten. Moderate prices; strictly private.—c/o SUMMERSEAT, Post Office, Bradford.

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| 1. The "Old Horse and Groom," Back of Holborn - above - Bar (since demolished). | 6d. each. |
| 2. Holywell Street, from St. Clement Dane's Church (since demolished). | 1s. 0d. each. |
| 3. The "Old Bell," Holborn (since demolished). | 1s. 0d. each. |
| 4. Leather Lane, Holborn | 1s. 0d. each. |
| 5. Davies Street (since demolished). | 6d. each. |
| 6. Fetter Lane, View from Holborn. | 6d. each. |
| 7. King Street, Westminster (since demolished). | 1s. 0d. each. |
| 8. Staple Inn, Holborn. | 1s. 0d. each. |
| 9. Milford Lane, Strand, and Booksellers' Row, looking West (since demolished). | 6d. each. |
| 10. Lincoln's Inn Fields. | 1s. 0d. each. |
| 11. Archway, Portugal Street, Lincoln's Inn Fields. | 6d. each. |
| 12. Old Houses in Strand. | 6d. each. |
| 13. Exchange Court, Strand. | 6d. each. |
| 14. Foubert's Place, Regent Street. | 1s. 0d. each. |
| 15. Rupert Street, W. | 6d. each. |
| 16. Wych Street, Strand (since demolished). | 1s. 0d. each. |
| 17. Booksellers' Row, looking East (since demolished). | 1s. 0d. each. |
| 18. George Court, Strand. | 6d. each. |

OR

***The Complete Set for* 10/6.**

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**NOTE.—Advertisements for this page must reach the Office not later than 5 o'clock p.m. on Monday.**

# Tenders.

*Information from accredited sources should be sent to "The Editor" at latest by noon on Monday if intended for publication in the following Wednesday's issue. Results of Tenders cannot be accepted unless they contain the name of the Architect or Surveyor for the work.*

*Addressed postcards on which lists of tenders may be stated will be sent post free on application to the Manager,* BUILDERS' JOURNAL, 9, *East Harding Street, E.C*

**Carshalton (Surrey).**—For villa residence, Rotherfield Road, Carshalton. Mr. Charles Botterill, architect, 583, Fulham Road, Walham Green, S.W.:—

| | |
|---|---|
| Page & Son | £2,120 |
| Akers & Co. | 1,651 |
| Edwards & Medway | 1,520 |
| Cusden & Co. | 1,447 |
| M. D. Wills | 1,445 |
| S. J. Evans* | 1,375 |

* Accepted.

**Hounslow.**—For the supply, delivery and fixing of the following, for the Heston and Isleworth Urban District Council:—(Section 2) steam-engines, dynamos, boosters, balancer switchboard, Korting condensers and cooling plant; (3) storage batteries; (4) cables; (5) arc lamps and glow lamps for street-lighting:—

[Section 2—Engines, dynamos, switchboard, &c.]

| | |
|---|---|
| T. Parker, Ltd. | £6,337 |
| R. Blackwell & Co. | 6,301 |
| Electrical Construction Co. | 6,252 |
| Brush Electrical Engineering Co. | 6.199 |
| Dick, Kerr & Co. | 6.186 |
| F. Suter & Co. | 6.177 |
| Johnson & Phillips | 6,140 |
| Reavell & Co. | 6,075 |
| Siemens Brothers | 6,048 |
| British Westinghouse Co. | 6,0[illegible]0 |
| Mather & Platt, Ltd. | 5.991 |
| International Electric Engineering Co. | 5,777 |
| Crompton & Co. | 5,729 |
| Lahmeyer Electrical Co. | 5,649 |
| Witting-Eborall | 5,645 |
| General Electric Co | 5 571 |
| Davey, Paxman & Co.* | 5,550 |
| Bruce, Peebles & Co. | 5,359 |

[Section 4.—Cables.]

| | |
|---|---|
| Siemens Brothers & Co. | 13,856 |
| Johnson & Phillips | 12,954 |
| St. Helens Cable Co., Ltd. | 11,759 |
| Anchor Cable Co., Ltd. | 11,412 |
| Callender's Cable and Construction Co., Ltd. | 11,187 |
| F. Suter & Co. | 11,169 |
| W. T. Glover & Co., Ltd. | 10,924 |
| British Insulated Wire Co., Ltd. | £10.356 |
| W. T. Henley & Co., Ltd.* | 9,852 |
| Western Electric Co., Ltd. | 9,555 |

[Section 5.—Arc lamps and standards.]

| | |
|---|---|
| Drake & Gorham | £1,402 |
| F. Suter & Co. | 1,018 |
| Gilbert Arc Lamp Co. | 926 |
| Electrical Co. | 904 |
| Oliver & Co. | 893 |
| W. T. Henley & Co. | 854 |
| British Westinghouse | 821 |
| Improved Electric Glow Lamp Co. | 813 |
| Crompton & Co. | 811 |
| Brockie-Pell Co. | 802 |
| Johnson & Phillips | 713 |

* Accepted.

**Paignton.**—For alterations and additions to the Carledge Street Board School, for the Paignton School Board. Mr. F. W. Vanstone, architect, Paignton. Quantities by Mr. V. C. Brown, Paignton:—

| | | |
|---|---|---|
| H. Webber & Sons | £1,968 | 0 |
| Maunder & Mudge | 1,950 | 0 |
| N. Drew | 1,920 | 0 |
| E. Westlake* | 1,885 | 10 |

* Accepted with modifications.

**St. Neots (Hunts).**—For additions to workhouse infirmary. Mr. S. Inskip Ladds, A.R.I B.A., architect, Huntingdon. Quantities by Messrs. A. Boxall & Sons, 8, Adam Street, Adelphi, W.C.:—

| | | |
|---|---|---|
| Kerridge & Shaw, Cambridge | £2,953 | 15 |
| F. Giddings, St. Ives | 2,642 | 0 |
| Willmott & Sons, Hitchin | 2,626 | 0 |
| G. Page & Son, Buckden | 2,335 | 0 |
| F. Wellham, Eaton Socon | 2,310 | 0 |
| W. Howard, Huntingdon | 2,259 | 0 |
| W Wade, St. Neots | 2,165 | 0 |
| G. Wrycroft & Sons,* St. Neots | 2,135 | 10 |

* Conditionally accepted.

**St. Albans.**—For the erection of a new warehouse, for Messrs. Ryder & Son. Mr. Percival C. Blow, A.R.I.B.A., architect, 7, London Road, St. Albans:—

| | | |
|---|---|---|
| Miskin & Son, St. Albans | £3,545 | 0 |
| E. Dunham, St. Albans | 3,492 | 0 |
| J. Bushell, St. Albans | 3,445 | 15 |
| W. Sharp,* St. Albans | 3,104 | 0 |

* Accepted.

**St. Albans.**—For rebuilding warehouse for Messrs. Cooper, Box & Co., Ltd. Mr. Percival C. Blow, A.R.I.B.A., architect, 7, London Road, St. Albans:—

| | |
|---|---|
| Boff Brothers, St. Albans | £2,075 |
| E. Dunham, St. Albans | 1,978 |
| Miskin & Son, St. Albans | 1,974 |
| Warton & Dunstall,* Bedford | 1,930 |

* Accepted subject to variations.

**St. Albans.**—For enlargement for Messrs. Watson & Co. Mr. Percival C. Blow, A.R.I.B.A., architect, 7, London Road, St. Albans:—

| | | |
|---|---|---|
| J. Bushell, St. Albans | £349 | 15 |
| W. Sharp,* St. Albans | 330 | 0 |

* Accepted.

**Springvale (Ryde, I.W.).**—For the erection of a pair of semi-detached cottages for General the Honourable Somerset J. Gough-Calthorpe. Stephen Salter, F.R.I.B.A. architect, Oxford and "Ponderill," I.W.:—

| | Cottages. | Walling. |
|---|---|---|
| Langdon | £1,010 | £380 |
| James | 991 | 375 |
| Burton | 975 | 353 |

[All of Ryde].

**Woodhall Spa (Lincs).**—For the laying of about 1,250yds. of 9in. and 6in. sewers, and the construction of a Shone ejector station, for the Woodhall Spa Urban District Council. Mr. Ernest Bolton, surveyor:—

| | | | |
|---|---|---|---|
| F. Stedman, Woodhall Spa | £3,555 | 5 | 0 |
| E. T. Edwards, Norwich | 2,526 | 15 | 6 |
| Vickers & Co., Nottingham | 2,350 | 0 | 0 |
| Oak Building Co., Colchester | 2,028 | 18 | 11 |
| J. M. Harrison,* Lincoln | 1,994 | 4 | 3 |
| Roberts & Co., Hornchurch, Essex | 1,483 | 4 | 0 |
| Spakes & Sons, Doncaster | 1,438 | 0 | 0 |

* Accepted.

**Wealdstone.**—For certain works of improvement in the Station (main) Road, for the Wealdstone Urban District Council. Mr. H. Walker, C.E., surveyor:—

| | | | |
|---|---|---|---|
| H. Brown, Watford | £1,582 | 0 | 0 |
| J. Meston, London, W. | 1,533 | 19 | 1 |
| W. Griffiths & Co., London, E.C. | 1,470 | 8 | 3 |
| Empire Stone Co, Leicester | 1,352 | 10 | 0 |
| T. Free & Sons, Maidenhead | 1,349 | 4 | 0 |
| A. B. Champniss,* Wealdstone | 1,346 | 8 | 8 |

* Accepted.

**Worthing**—For the erection of a fire-brigade station and firemen's cottages on land situate on the east side of High Street, Worthing, for the Corporation:—

| | | | |
|---|---|---|---|
| F. Farnfield | £3,864 | 12 | 5 |
| Bostel Brothers, Ltd. | 2,925 | 0 | 0 |
| Potter Brothers, Horsham | 2,791 | 0 | 0 |
| Longley & Co., Crawley | 2,739 | 0 | 0 |
| R. Cook & Sons, Crawley | 2,679 | 0 | 0 |
| W. Sandell | 2,617 | 10 | 0 |
| W. W. Sandell | 2,603 | 2 | 0 |
| Sattin & Evershed, Brighton | 2,548 | 0 | 0 |
| Rowlands Brothers,* East Street, Horsham | 2,309 | 0 | 0 |

* Accepted. [Rest of Worthing]

**The Building Boom at Glasgow** shows no signs of diminishing.

**H. SLARK** *(Government Contractor),*

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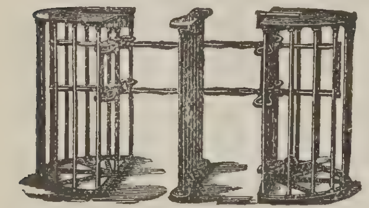

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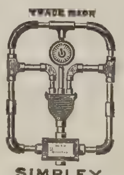

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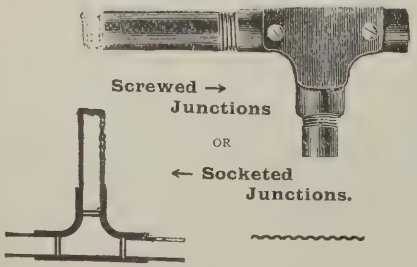

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80, Digbeth, Birmingham;
and 20, Bucklersbury, London, E.C.

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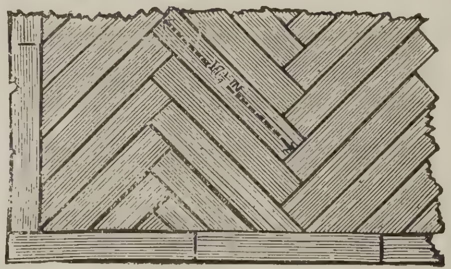

| Per 100 Blocks out of sizes. | YELLOW. | | PITCH PINE |
|---|---|---|---|
| | At Wharf. | ex Ship within one month. | At Wharf. |
| 17½ × 3 × 3 | 12 9 | 12 0 | 16 6 |
| 17½ × 3 × 2 | 8 3 | 7 9 | 11 5 |
| 17½ × 3 × 1½ | 6 9 | 6 3 | 9 0 |

**PRIME DRY OAK & PITCH PINE FLOORINGS**

With Special Joint to conceal Nails—

1¼ × 4 Oak, 56/9 Pitch Pine 27/- per square.
1 × 4 „ 45/- „ 22/9

*These prices do not include desiccation.*

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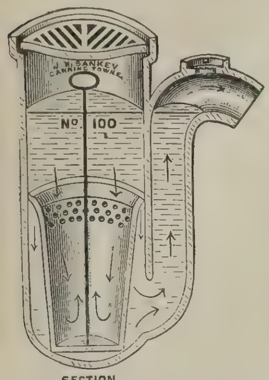

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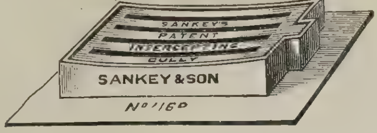

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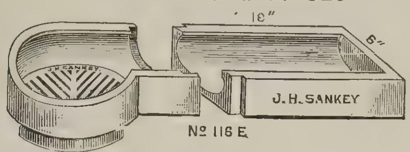
AND KERB COMBINED
ALSO EXTENDING PIECES



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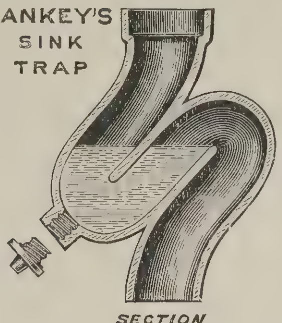
GLAZED STONEWARE
2" SINK TRAP

SANKEY'S
SINK
TRAP



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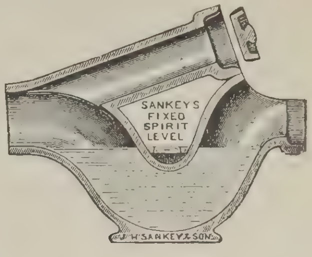

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ARE THE STRONGEST
AND FINEST IN THE MARKET.

**BODY** IS VERY CLOSE AND STRONG, BEING ABOUT TWICE THE WEIGHT AND THICKNESS OF ORDINARY CLOSETS.

**GLAZE** IS A PORCELAIN ONE, BRIGHT AND THICK, IS PERFECTLY FREE FROM LEAD, AND NEVER CRAZES.

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**JOSEPH CLIFF & SONS, WORTLEY, LEEDS.**
(BRANCH OF THE LEEDS FIRECLAY CO. LTD.)
LONDON: BALTIC WHARF, WATERLOO BRIDGE, S.E.

## Bankruptcies.

[Abbreviations: R.O.—receiving order; P.E.—public examination: C.C.—county court; O.R.—official receiver; Adj.—Adjudication.]

R. RHODES, builder. Tipton. R.O. August 4th.

J. W. STOCKTON, general and ornamental mason, Winsford. R.O. and adj. August 6th.

G. WALES, builder, South Hackney, N.E. R.O. August 8th.

W. MOSS, builder and contractor, Senny Bridge. Liabilities to rank for dividend £544; assets £69.

T. & C. BERRILL, builders and contractors, Irchester. R.O. August 5th.

F. W. REAVELL, builder and contractor, Knaphill, and Farnborough. R.O. and adj. August 5th.

W. J. WEBB, builder, Brixton. Adj. August 3rd. P.E., London Bankruptcy Court, September 22nd, at 12 30.

R. DAVIES, builder and contractor, Conway. R.O. and adj. August 1st.

B. WEBSTER, builder and contractor, Cheadle Hulme First meeting, O.R.'s, Stockport, August 21st, at 11. P.E., Stockport C.C., August 27th, at 11.

G. DAVEY, builder, St. Mary Church. R.O. and adj. July 31st. First meeting, O.R.'s, Exeter, August 19th, at 10.30. P.E., The Castle, Exeter, August 19th, at 11 30.

W. F. McLAREN, joiner and builder, York. R.O. August 5th. First meeting, O.R.'s, York, August 21st, at 12.15. P.E., York Courts of Justice, October 9th, at 11.

W. WEBBER, builder, Leeds. R.O. and adj. August 6th. First meeting, O.R.'s, Leeds, August 19th, at 12.30. P.E., Leeds C.C., September 8th, at 11.

H. INGLESON, builder, Merthyr. Gross liabilities £4,824, of which £2,023 is expected to rank for dividend; assets estimated at £523; deficiency £1,500.

BISHOP, PRATT & CO., LTD., builders' merchants, London, E.C. Gross liabilities £7,083, of which £5,583 is unsecured; deficiency £13,590.

J. HOWARD, builders' merchant, London, N.E. Gross liabilities £17,973, of which £11,734 is expected to rank for dividend; deficiency £6,315.

S. FRANKLIN, builder, Stonehouse. P.E, Gloucester Shirehall, September 29th, at 12. Gross liabilities £2,837, of which £515 is expected to rank for dividend; assets £98; deficiency £431.

The following companies are to be wound up:—

ENGLISH AND GENERAL TRAMWAYS CO., LTD. P. J. Brenckley, 1 and 2, Great Winchester Street, E.C., liquidator.

HARPURHEY COLOUR CO., LTD.

LOUGHTON ESTATES CO., LTD. W. W. Sexton, 17, Fenchurch Street, E.C., liquidator.

## New Companies.

TUSCANY SYNDICATE, LTD., manufacturers, contractors, builders, &c. Capital: £1,000 in £1 shares.

WHITE HALL ESTATES, LTD., to acquire land and buildings, as builders, contractors &c., 79½, Gracechurch Street, E.C. Capital: £10,000 in £1 shares.

RYCROFT & CO., LTD., joiners, cabinet makers, &c., Rutland Street, Wakerfield Road, Bradford. Capital: £1,000 in £1 shares.

REED & SON, LTD., breeze burners, brick, tile &c. dealers, Bournehills, Netherton, near Dudley, Worcestershire. Capital: £500 in £1 shares.

GEORGE BARON, LTD., shopfitters, contractors, joiners and builders, &c., Robin Hood Yard, Platt Street, Nottingham. Capital: £2,000 in £1 shares.

CITY AND DISTRICTS ESTATE CO., LTD., to construct buildings, works and conveniences, as builders, contractors, &c., 844, Salisbury House, London Wall, E.C. Capital: £2 500 in £1 shares.

MEMORIALS, LTD., to acquire copyrights in monuments and statuary, particularly in those representing the Royal Family of Great Britain, to design and carry out the Queen-Empress memorials and other monumental or architectural works in marble, granite, bronze or other material, and to carry on in Great Britain, South Africa or elsewhere the business of sculptors, masons, quarriers, &c., 93-4, Chancery Lane W.C. Capital: £2,500 in £1 shares (2,000 6 per cent. cumulative preference).

## Coming Events.

**Wednesday, August 19.**
JUNIOR INSTITUTION OF ENGINEERS.—Visit to Messrs. Charles Gammel & Co.'s Works in the morning, and Messrs. J. Dixon & Sons in the afternoon.

**Thursday, August 20.**
JUNIOR INSTITUTION OF ENGINEERS.—Excursion to Castleton.

**Saturday, August 22.**
NORTHERN ARCHITECTURAL ASSOCIATION.—Afternoon Excursion to Blagdon and Stannington.

**Friday, August 21.**
JUNIOR INSTITUTION OF ENGINEERS.—Excursion to the Toledo Steel Works of Messrs. J. H. Andrew & Co. and The Suffolk Works of Messrs. T. Turner & Sons. Summer Dinner in the evening at Royal Victoria Hotel, Sheffield.

**Tuesday, Sept. 1, to Friday, Sept. 4.**
IRON AND STEEL INSTITUTE (Barrow-in-Furness).—Annual Meeting. Inaugural address by Mr. Andrew Carnegie on "Developments of the British and American iron industry during the last thirty years." Mr. R. A. Hadfield on "Alloys of Iron and Tungsten." Mr. J. E. Stead and Mr. A. W. Richards on "The Restoration of dangerously Crystalline Steel by Heat Treatment." Messrs. J. E. Stead and A. Windsor Richards on "Sorbitic Steel Rails." Mr. Thomas Baker on "The Influence of Silicon on Iron." Prof. E. D. Campbell on "Diffusion of Sulphides through Steel." Mr. William Campbell on "The Heat Treatment of Steel." Mr. R. M. Daelen on "The Rolling of Large Pipes." Mr. D. A. Louis on "The Regulation of the Combustion in Coke-oven Practice." Mr. W. F. Pettigrew on "The Fuel used in the Barrow-in-Furness District." Mr. C. H. Ridsdale on "The Diseases of Steel." Prof. A. Stansfield on "Carbon in Iron."

**Monday, Sept. 14.**
SANITARY INSTITUTE.—Lecture on "Mechanical Physics: Laws of Motion, Hydraulics, &c.," at 7.30 p m., by E. J. Steegmann.

**Wednesday, Sept. 16.**
SANITARY INSTITUTE.—Lecture on "Natural Forces: Light, Heat, Electricity; Chemistry," by E. J. Steegmann.

**Friday, Sept. 18.**
SANITARY INSTITUTE.—Lecture on "The Atmosphere: Pressure and Composition; Air; Combustion and Respiration," by E. J. Steegmann.

**Saturday, Sept. 19.**
SANITARY INSTITUTE.—Inspection and Demonstration at "Wimbledon Sewage Works," at 3 p.m., by C. H. Cooper.

**Monday, Sept. 21.**
SANITARY INSTITUTE.—Lecture on "Meteorology," by E. J. Steegmann.

**Wednesday, Sept. 23.**
SANITARY INSTITUTE.—Lecture on "Sanitary Law (A): Introductory Remarks, Public Health Acts English, Scotch, Irish; other Statutes relating to Public Health; By-laws (Model, &c.), Regulations, Orders, Memoranda, &c.," by J. Priestley. Inspection and Demonstration in the "District of Islington and at the Borough Disinfecting Station," at 2 p.m, by James R. Leggatt.

ROOFING SLATES:
Velinheli, Penrhyn, and Westmoreland.
SLATE SLAB GOODS:
Both Plain and Enamelled.
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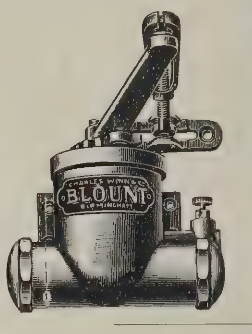

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*(Where all communications must be sent.)*
SAND PITS, Grovebury, Shenley Hill and Heath, Nearly 200 Acres, and at Flitwick.
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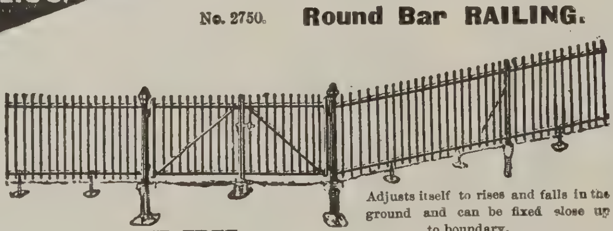

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# THE
# BUILDERS' JOURNAL
## AND ARCHITECTURAL RECORD.

August 26, 1903. Vol. 18, No. 446. 9, East Harding Street, E.C

### Vermiculated Stonework.

Some months ago we took occasion to protest against the blocked column, that ugly feature which has neither the grace of a column nor the strength of a pier; and we have reason to know that our remarks met with wide approval among those who had the sense to recognize that it is foolish to persist in adopting a feature simply because precedent has established it. We now wish to protest against vermiculated stonework, another senseless and harmful device which, because it has been employed by generations of architects, seems to claim its place without dispute. This stonework, as everyone knows, is first dressed smooth and then incut with a chisel till it becomes a maze of worm-like contortions. The practice is perfectly senseless. We are told by the unwritten code that this manner of working gives the stonework an appearance of strength; as if there were no such thing as genuine hammer-dressed work. Think what all this wretched vermiculation means. Putting aside the fact that it is a waste of labour, consider how dirt and dust collect in the innumerable crevices of the stonework, and, as a consequence, how readily decay begins. And all this sacrificed to an appearance of strength. Two examples in London occur to us which very clearly show the right and the wrong method of working. Let the admirable rough-dressed granite on the Bank of England branch next to the Law Courts be compared with the vermiculated stonework of Somerset House, and it will be apparent how well the one serves its purpose and how utterly decay-inviting is the other. To trace the origin of vermiculation would be difficult, but it seems to have begun with the desire to give the stone an appearance of being eaten away—logically by worms! We know that in dressing granite or other hard stone blocks it is customary to use a pointed tool, or punch, which shivers the stone around and so enables the surface to be roughly levelled. Marks of the tool are left, and may rightly be left; yet, as another variety of vermiculation (if we may call it so) it is often the custom to give this indented appearance to soft stone, by drilling holes in it! We should like to see such methods abandoned. The case would be different if some pleasing pattern were the result, but that is not so. With hammer-dressing so logical and suitable, it is folly to waste time and labour on vermiculating the stonework. We are surprised that the late Mr. Brydon should have thus disfigured the new Government offices now being erected at the bottom of Whitehall.

### The Everlasting Public.

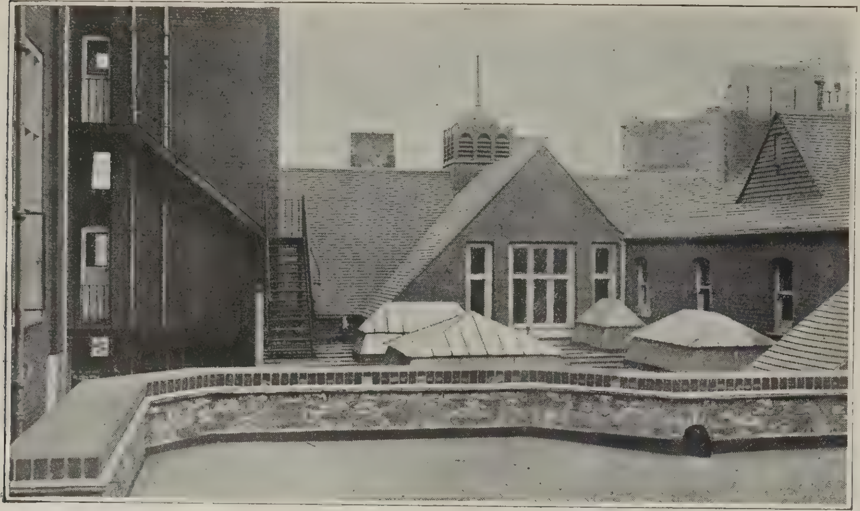
Referring to our remarks on the adverse criticism which is commonly meted out by the general public to Westminster Cathedral, a correspondent observes that one would expect an architect to be disappointed if his work did not receive general approbation. No doubt there is a measure of truth in this, more especially as regards the average architect, but we are inclined to think that so talented a man as Bentley, though he might very much appreciate the good opinion of fellow architects, would not care a great deal what the general public thought about his building. However, our correspondent takes this as a thesis for some remarks on the educators or taste-formers of the public. These, he contends, are the teachers in the primary schools, from whom "the majority of people receive their only training": and on this raw material the instructor is to make his ready impression. The opportunities are to occur in history and drawing lessons especially, children being given an intelligent account of ancient buildings and having set before them simple sketches of typical buildings well proportioned. "The present tendency in drawing as taught in the primary schools is much more towards the pictorial than the decorative, and almost ignores the architectural; which, considering how many boys become afterwards engaged in the building trades, is much to be regretted." But the difficulty is that the teachers themselves know practically nothing about architecture. Moreover, it might be argued that even if they did, even if the history of architecture were one of their subjects, the taste of those under their direction would not be improved whilst the bulk of modern buildings around them exercised such a disastrous influence. That we will not dispute. But some study of good architectural examples would at least be setting the feet in the right path. We are not among those who discredit the past for the egoism of to-day. The point is worth thinking about.

### Building Dust.

We are glad to see that the City authorities intend to put an end to the dust nuisance caused when buildings are being pulled down. The new by-laws, which have been drafted by the Streets Committee in consultation with the Royal Institute, the Surveyors' Institution and the Institute of Builders, are stringent enough to effect their purpose, provided they are strictly administered. It will be seen from the particulars given on another page of this issue that, in addition to the usual hoards and fans at first-floor level, the windows and other openings will have to be close-boarded, and the roof, internal partitions and cross walls pulled down before the main walls are touched. Another important requirement is that water shall be freely sprinkled whilst the demolition is going on. While, finally, the work is only to be allowed during certain hours—that is, not between 10 and 6, when the streets are full of people. The public, we are sure, will very much appreciate the new by-laws, for this dust nuisance has become very aggravating and, to a certain extent, dangerous—general feeling being adverse to having lime blown into one's eyes and one's clothes covered with brick dust.

### The Australian Patents Bill.

The new Patents Bill introduced into the Australian Senate has several features of interest to all concerned with invention. In this country it is necessary, in addition to the fees required on sealing, to pay annual renewal fees for the whole term of the patent—fourteen years—which brings the total costs up to £95. In the United States the fee is only £7 for seventeen years. In Australia it is proposed that the initial fees shall be £8, with a renewal fee of £5 at the end of the seventh year, making altogether £13 for the whole term of the patent (fourteen years). An innovation is the granting of what are called patents of addition, that is to say, improvements on the original patent which the inventor may have discovered since his specifications were first sealed: these patents of addition to be granted on payment of one-half the original fees and to cover the term of the governing patent. According to British practice, it is of course necessary to take out a complete new patent for any improvements. The new Bill has evidently been drafted with cognizance of our own new Patents Bill. Consequently we are not surprised to find that a preliminary examination is to be instituted before the grant of any patent, though it is difficult to see why this examination should be taken back a hundred years—fifty is considered enough here, and Australia was scarcely a civilized country a hundred years ago. Another provision in the new Bill is that the invention must be worked in Australia within five years of its grant, and that the importation of the patented article shall not be allowed after four years from the grant. These provisions are quite new to British law, but they are eminently satisfactory.



ROOF OF OUT-PATIENTS' WAITING HALL, WITH ESCAPE STAIRS FROM WARDS.

# THE NEW BELGRAVE HOSPITAL FOR CHILDREN.

THE new Belgrave Hospital for Children which has been erected in the Clapham Road, close to St. Mark's Church, Kennington, S.E., was opened a short time ago by Princess Henry of Battenberg. The hospital was formerly in Pimlico, where it was installed in two old houses. It has now been removed to a larger and far poorer population, to whom it will be a great benefit; the founders intended that it should be for the poorest of the poor.

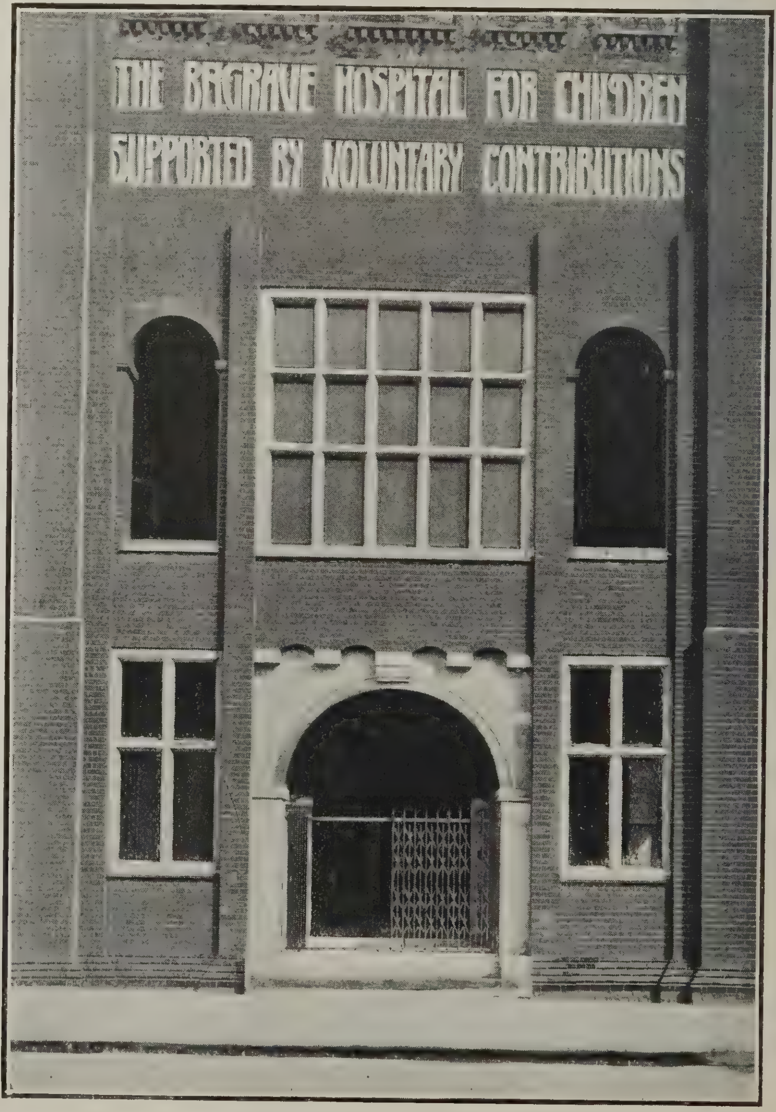
The site was occupied by a timber yard and the "Greyhound" inn. The original contract for the building work was £49,000, but that included the west wing, a duplicate of the east wing, which has not yet been erected. Up to the present the centre block, east wing, part of the south wing, out-patients' department and mortuary have been erected, comprising two wards with fourteen cots in each and a babies' ward with eight cots, together with offices for the staff. This has cost about £35,000.

To complete the payment of expenses incurred, as well as the additional cost of equipment necessary to start the hospital in working order, a sum of £15,000 is needed, and a further sum of £25,000 will be required to provide the additional wards giving a total accommodation for seventy-eight cots with all necessary offices for staff and equipment.

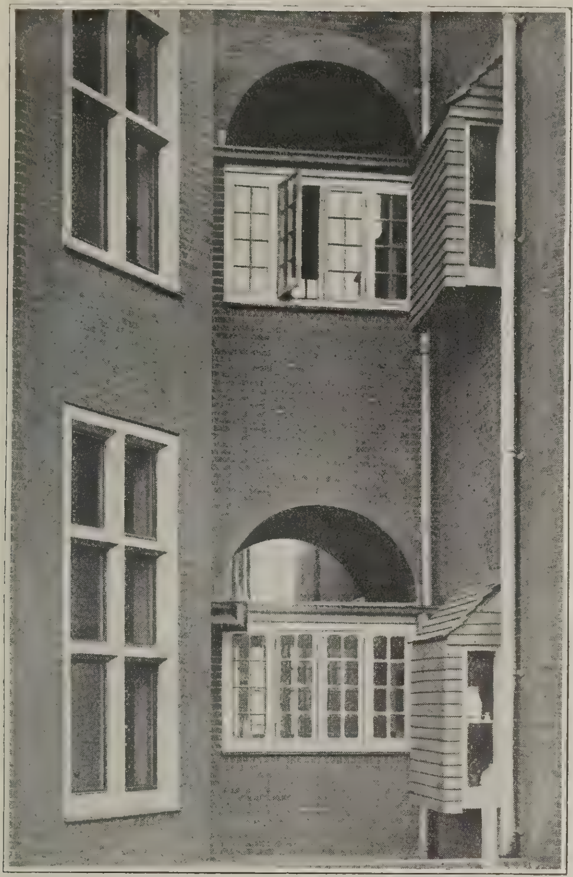
The architect of the hospital is Mr. H. Percy Adams, F.R.I.B.A., of 28, Woburn Place, Russell Square, London, W.C., who has had a large experience in this branch of design. The builders are Messrs. F. Gough & Co., of Hendon. The hospital is built of red Bracknell bricks with Portland-stone dressings to windows and doors, and red Broseley tiles on the roofs. The foundations for the ordinary walls were carried down about 13ft. to the ballast, while they go down to 20ft. for the boiler-house, which is 16ft. below the entrance hall in the centre block: the footings of the latter are 4ft. 3in. wide, of hard Sittingbourne stocks, which width is not surprising when it is stated that this centre pile towers up to nearly 100ft. The concrete under the footings is 3ft. thick. All external walls are 18in. thick above ground-level, reduced to 14in. for the top storey: the out-patients' department, which is not so high as the rest of the buildings, also has 14in. walls.

Turning now to the plans of the hospital, in the basement are a large number of rooms chiefly intended for stores of different kinds; but the main space is occupied by a pair of steel Cornish boilers so arranged that both can be worked together or singly when one is being cleaned out, while in one corner of the site on the back frontage is an isolation room which could be used for some suddenly-discovered case of infectious disease. Coming to the ground floor, it will be seen that an isolation room is provided just inside the entrance porch. This is a provision against any infectious case which may be discovered when children are brought to the hospital, in which event they may be immediately taken away by the side door and so removed without entering the hospital proper—a very important matter when it is remembered how easily infectious diseases spread among children, especially sickly children. The porch is ceiled with gold mosaic. The entrance passage has a porter's room on one side, connected by telephone with all parts of the hospital, and a secretary's office on the other side. The passage is barrel-vaulted, the vault being covered with glass mosaic of a very beautiful blue tint laid in lines parallel with the axis; the walls being lined with Piastraccia marble having a 6in. Verde Antique dado and a capping of Irish green marble. This treatment is carried out in the entrance hall beyond, the floor also being laid with squares of Piastraccia marble: in a recess of the hall is a copper fireplace effectively bordered with different marbles. This marble and mosaic work, the effect of which is very charming, may be called the only extravagance that has been indulged in. And it may here be mentioned that the architect has designed not only the fabric of the building, but all its interior finishings, down to the door knobs, electric fittings and the tile covering for the ward stoves.

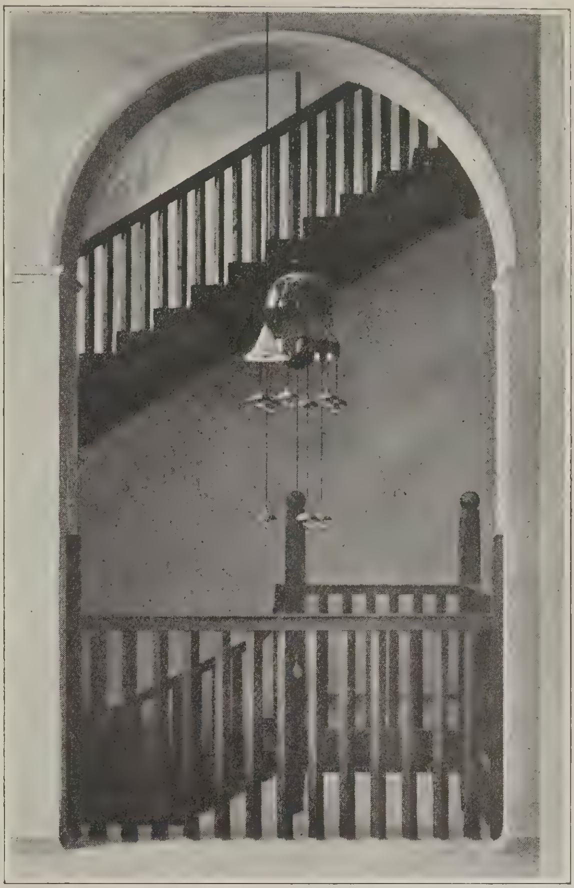
To the left of the entrance hall is the surgery with splint store adjoining, while beyond are the rooms of the resident medical officer; to the right will be a board-room and the matron's department. A corridor runs straight across the building from east to


THE BELGRAVE HOSPITAL FOR CHILDREN
SUPPORTED BY VOLUNTARY CONTRIBUTIONS

MAIN ENTRANCE IN CLAPHAM ROAD.



CROSS-VENTILATED PASSAGES FROM WARDS, AND OUTSIDE HANGING LARDERS.



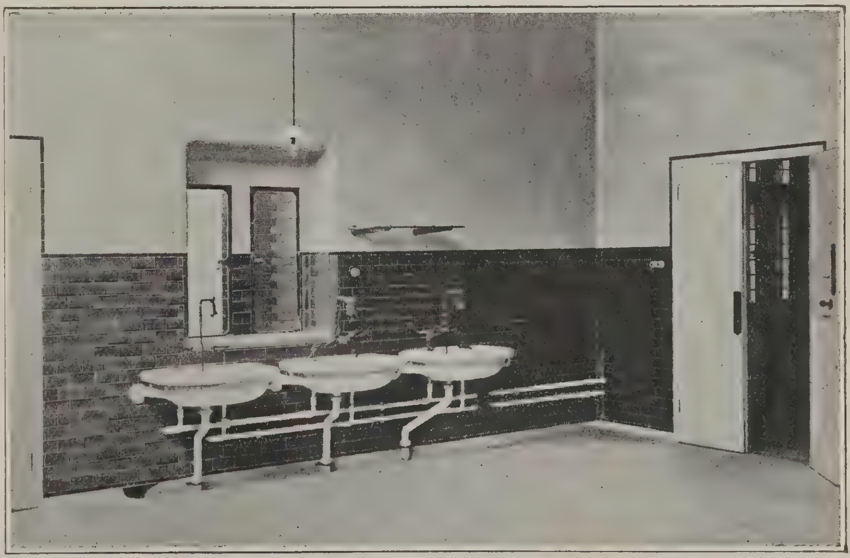
THE STAIRCASE FROM FIRST-FLOOR LEVEL, WITH ELECTROLIER.

west; but, as already stated, the western wing of the hospital is not yet built. From the entrance hall one passes direct into the kitchen department, the arrangement of which can be seen from the plan; glazed tiles are placed under the grill, so that grease may be easily cleaned off, and the sinks in the scullery are of pitch-pine with teak tops. To the left is the out-patients' department, which occupies a large area. The entrance is from Camberwell New Road. Here again provision is made to check any cases of infectious disease, ante-rooms being provided on each side where children may be examined. The out-patients' waiting hall is a large well-lighted room, with the usual consulting rooms adjoining: it will be noticed, too, that a staircase leads down to the isolation room in the basement already mentioned. Patients pass from the hall into the medicine room (where they are served through two hatches from the dispensary) and so into a corridor that leads out at the back of the hospital. Thus the out-patients' department is kept quite distinct and separate.

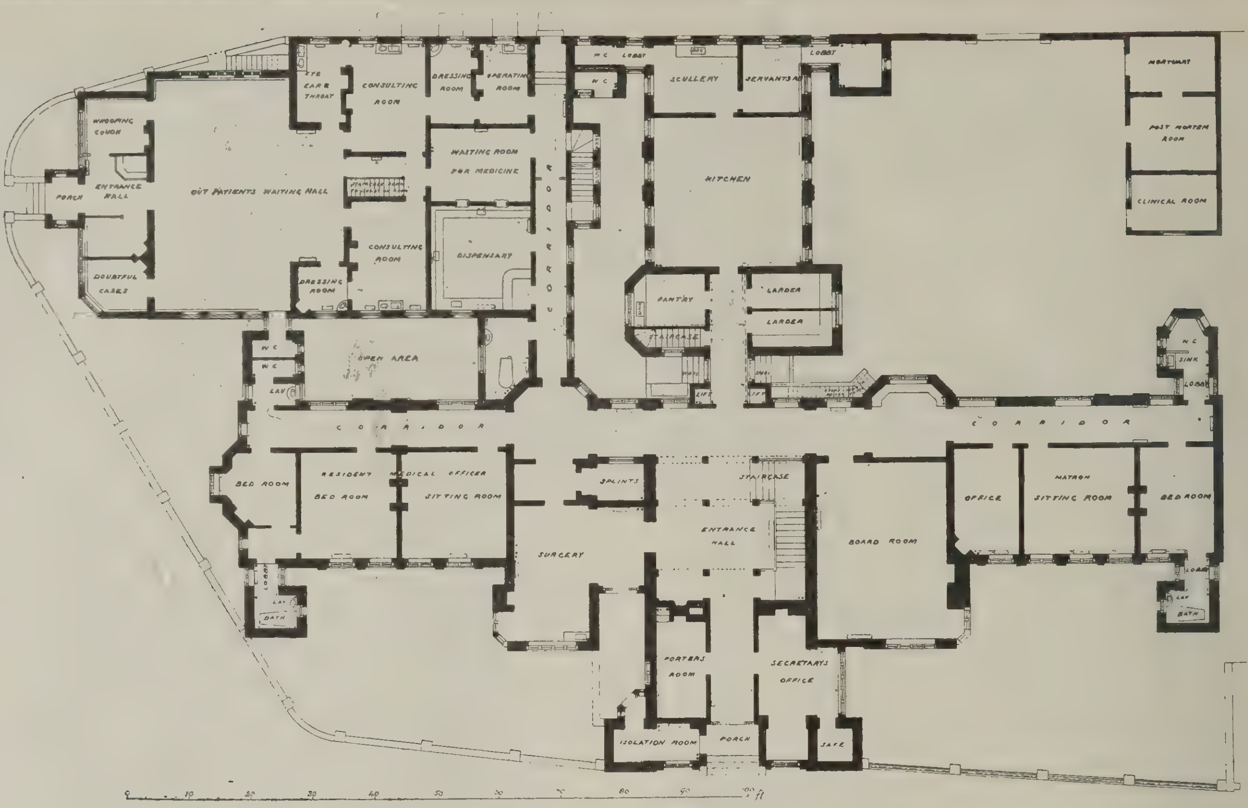
Rising from the entrance hall is the main staircase, a special feature of the hospital. The construction is shown by the illustration on p. 49. It is made entirely of teak (jointed in places with ebony keys) and has solid treads 13$\frac{1}{2}$in. by 6$\frac{1}{2}$in.; these latter are quite unusual. The staircase is carried independently of the walls, with a stout newel running to the top of the building, and being of solid hardwood is considered to be very fire-resisting. The balusters are diagonal on plan and are rounded at the bottom to prevent the collection of dust.

The wards are on the first and second floors; they are laid with teak blocks, and are lighted with six windows on each side and a large bay at the end. For about half their height the walls are covered with tiles of a soft blue-green tint with dark green border and dado, being painted a cream colour above. The windows are sash windows with large fanlights over. A double line of 2in. hot-water pipes, lacquered green, runs along the sides and one end of the ward, while in the middle is a tiled stove. Adjoining each ward is the nurses' kitchen, with range, dresser and sink. Attention is drawn to the special cupboards or larders in these kitchens, which are hung outside the building (as shown by the illustration on this page) and can thus be kept admirably ventilated. The inspection eye into the ward is also a feature, because instead of being a flat sheet of glass it is carried into the ward as half an octagon, which enables the nurse to see the whole of the cots at a glance. Besides the main wards on the first floor is a very bright babies' ward lined entirely with cream-coloured tiles and having large panel pictures, also in tiles, illustrative of children's stories.

The second floor is practically a duplicate of the first, except that an operating theatre takes the place of the babies' ward. This theatre has a north light along the whole of one side. The walls are of cream-coloured tiles with a green dado about 5ft. 6in. high. The doors shut quite flush and have no mouldings. The floor is of white marble mosaic with a grey border, and has a channel under the basins into which the overflow discharges, being carried along into the washing-up and sterilizing rooms on either side, and there trapped. The wall shelves are of $\frac{1}{2}$in. glass held on brass arms.



OPERATING THEATRE ON SECOND FLOOR.



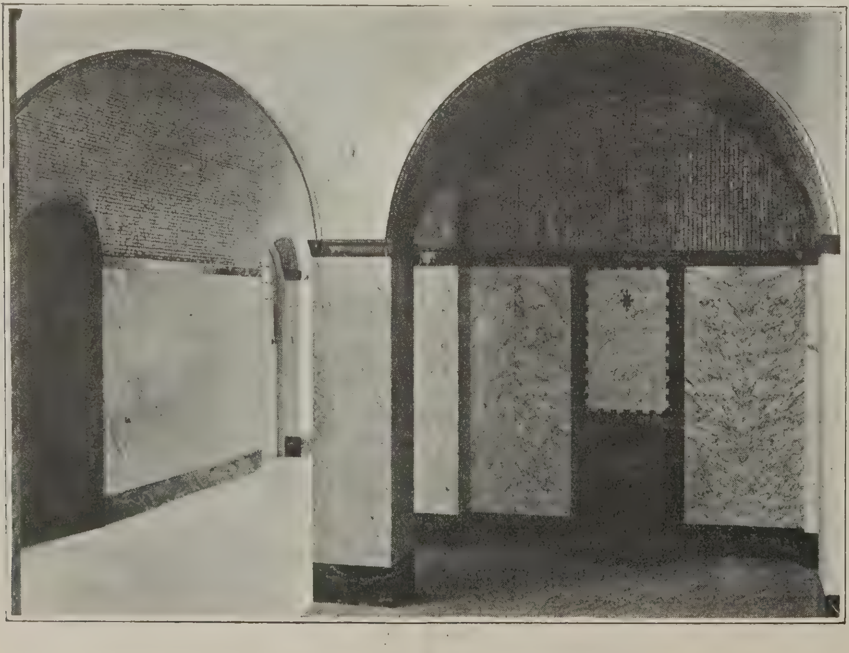
BELGRAVE HOSPITAL FOR CHILDREN: GROUND-FLOOR PLAN.

This theatre is ventilated on the plenum system, air being forced in through a brass netting about 18in. below the ceiling (after having been washed and warmed), and withdrawn at floor level through mica flaps. In the washing-up room is a switch for controlling the temperature, the pointer ranging over "all hot, $\frac{5}{6}$ths hot, $\frac{2}{3}$rds hot, $\frac{1}{2}$ hot, $\frac{1}{3}$ hot, $\frac{1}{6}$ hot and all cold." The operating theatre is the gift of Mr. Clinton Dent, of St. George's Hospital, who has interested himself very largely in the hospital; according to his suggestion, the basins have levers which can be worked with the elbows, thus leaving the hands free; and it is here opportune to note that there are no plugs to the basins, for the reason that surgeons now regard it as safer to wash their hands in running water.

The third floor is occupied with bedrooms for the nurses, and the fourth floor, which carries the centre pile so high, with cubicles for the servants.

With regard to the sub-contractors for the hospital, we may say that Messrs. Lindsay, Neal & Co., of Paddington, carried out the steel construction and fireproof floors; Messrs. Diespeker, Ltd., of 57–60, Holborn Viaduct, the mosaic floors, for which only the hardest marbles have been used (the firm give a guarantee of durability for twenty years); Messrs. The Acme Wood Flooring Co., Ltd., of Gainsborough Road, Victoria Park, N.E., the wood-block floors; Messrs. Burke & Co. the marble floors and mosaic work in the entrance corridor and hall; Messrs. George Wragge, Ltd., of Manchester and London, the iron railings and electric fittings, including the electrolier that hangs by the staircase from the top of the building to the bottom, illustrated on p. 49; Messrs. Burt & Potts, of York Street, Westminster, the iron casements; Messrs. W. B. Simpson & Co., of 97 and 99, St. Martin's Lane, the wall and picture tiling; Messrs. Pilkington the tiling of the operating theatre; Messrs. Doulton & Co. the sanitary fittings—the lavatories and sinks in the operating theatre being of strong white-glazed fireclay, with vulcanite standing wastes (the sinks are in pairs with a glazed fireclay slab between); Messrs. E. H. Shorland & Brother, of Manchester, the ward stoves; Messrs. The St. Pancras Ironwork Co., of London, the outside fire-escape stairs from the wards; Messrs. Slater & Co., of 25, High Holborn, the kitchen fittings; and Messrs. Rosser & Russell, Ltd., of 22, Charing Cross, the ventilation of the operating theatre and the hot-water system (low pressure); Messrs. Foote & Milne the electric wiring and fitting and general heating. The wood floors, it may be mentioned, are laid on the "Immovable Acme" system of dowelled blocks invented by Mr. William Duffy, the blocks being rift sawn so that only the fine grain forms the wearing surface; 600yds. of $1\frac{1}{2}$in. pitch-pine block flooring and about 350yds. of $1\frac{1}{2}$in. teak flooring have been laid in the hospital by the Acme Wood Flooring Co.

The building work has been under the direction of Mr. J. Rowson.



CORNER OF ENTRANCE HALL AND PASSAGE.

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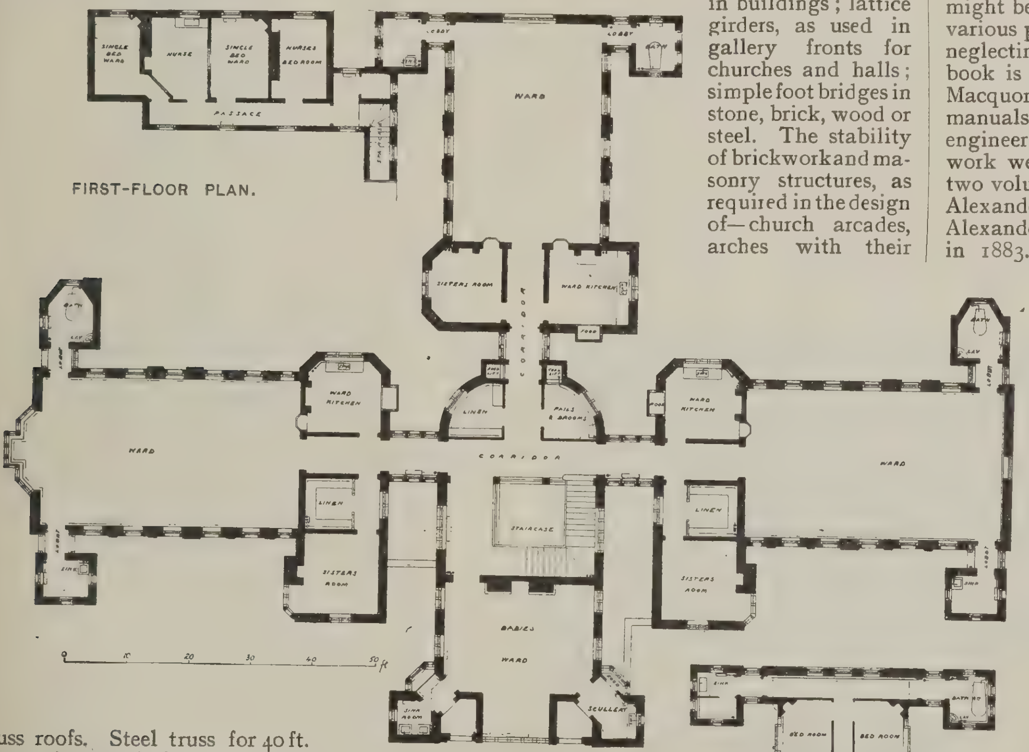
**A Royal Residence in Ireland.**—It is stated that the King is considering the question of a royal residence in Ireland. When there last month he was greatly struck with the beautiful surroundings of the estate of Kylemore Castle, in Galway, right in the heart of Connemara, which has been suggested as a royal residence. This is the biggest of all the great Irish homes, and is quite a modern house, having been built about twenty years ago by Mr. Mitchell Henry, a wealthy Yorkshire manufacturer. There are 200 bedrooms in the house. The castle has remained untenanted and neglected for many years. No suitable tenant was found for the property, although it has been "to let" for the last decade. The house is too big for an ordinary person. About six months ago the trustees, grown tired of the responsibility, put the estate up for sale, but the property was withdrawn, the highest bid being £30,000.

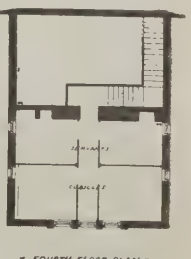
# GLASGOW TECHNICAL COLLEGE.

### Classes in Building Construction.

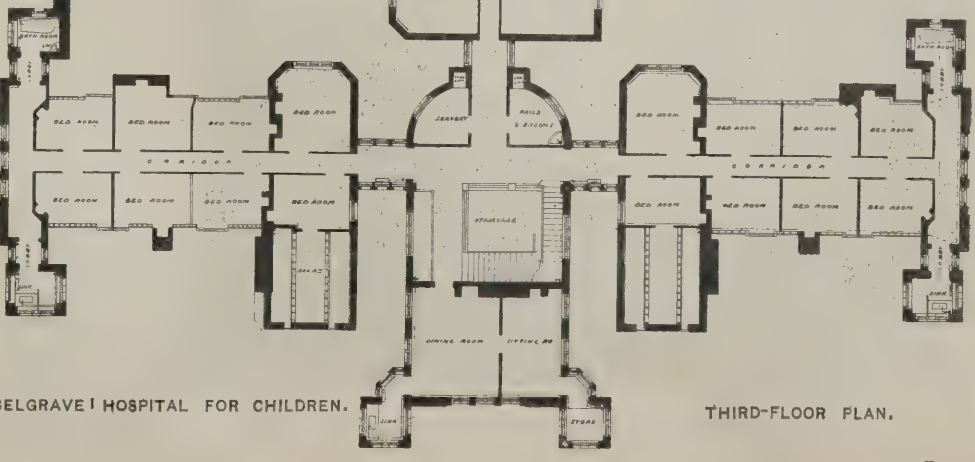
THE new calendar of the Glasgow and West of Scotland Technical College contains the following revised syllabus of Course I. in building construction and design (this syllabus has been rearranged so as to make it specially suitable for Scottish students):—Brickwork in stretching, heading, English, Flemish, Single Flemish and Scottish bonds, with junctions of walls meeting at salient and re-entering angles; also footings, corbels, cornices, copings, &c. Openings in brick walls, with brick-arched heads, and sills of stone and brick. Centering for arches. Construction of a flitch beam. Carpentry joints. Clearing of site, dwarf walls, wall-plates, sleeper joists, flooring, kitchen fireplaces, ranges and hot-water supply, as in tenements. Joisting of upper floors, with bridling for hearths. Fireplaces, grates and mantelpieces. Common roofs, with the slating and plumbing details. The lean-to, couple, collar-beam and king-post truss roofs. Steel truss for 40 ft. span, with detail of joints. Concrete roofs. Common joinery as in doors, with their finishings. A fixed window with astragals. Glazing. A kitchen dresser, bunker and shelving. Strapping, lathing and plastering. Masonry mouldings, with the preparation of zinc moulds. Varieties of masonry and facework on stones. Compound walls of ashlar and rubble. Stone arches and lintels. Common window sashes, cases and finishing. Painting and paperhanging. Bay and oriel windows. Construction and detail of tenement staircases, with balusters and hand-railing. The section and sizes of a common bath, wash-hand basin, water-closet, sink, wash-house tubs, &c., and how the drainage and ventilation pipes are arranged. The laying of fireclay pipes forming drains, with disconnecting trap, manholes, &c. The plans, elevations and sections of a tenement, with the application of the Glasgow Building Regulations Act to such buildings. (*Fee*, 10s.) Course II. remains almost as before, but Course III., the Design of Building Structures, has also been rearranged. The syllabus is as follows:—The derivation and application of the formulæ commonly used to ascertain the strengths and sizes for the following: Wooden beams, flitch beams, joisting, steel joists, concrete floors and roofs, weights and thrusts of fireproof floors; cast-iron cantilevers and lintels; special forms of beams used in schools and similar buildings, construction of the central halls of public buildings, trussed beams and purlins, compound and built-up girders, as used in shop-fronts; columns of wood, cast-iron and steel, with the methods used to connect them at bottom and top to other columns or parts of structures, as in warehouses; cast-iron and steel stanchions. Riveted joints, proportion and pitch of rivets, essentials of good riveting and calculations for joints. The determination, mainly by stress diagrams, of the nature and amount of the stresses in the following structures, together with the practice of designing the members to resist the stresses: All kinds of steel and composite roof trusses used in buildings; lattice girders, as used in gallery fronts for churches and halls; simple foot bridges in stone, brick, wood or steel. The stability of brickwork and masonry structures, as required in the design of—church arcades, arches with their thrusts and how counteracted; vaulting, the value of pinnacles and turrets, also where they should be placed; domes of steel, concrete, stone and brick; towers, spires with their squinches; factory chimneys and lightning conductors; foundations, underpinning, shoring and slapping; retaining walls for earth and water, as commonly met with in building works. Materials are studied as required by the subjects. The hydraulics of water supply to buildings, warming by hot water, high and low pressure, and by steam; natural and artificial ventilation, lighting, drawing of sanitary appliances and drain plans. Throughout the session students will draw constructional details and designs involving knowledge of the subjects of the lectures. (*Fee*, 10s.)



FIRST-FLOOR PLAN.



- FOURTH FLOOR PLAN -



THIRD-FLOOR PLAN.

BELGRAVE HOSPITAL FOR CHILDREN.

# Views and Reviews.

### Mechanics of Structures.

The title of this work is misleading, because it is neither elementary nor does is deal with applied mechanics in general, at might be inferred, but only so far as concerns various problems in the design of structures, neglecting mechanism and machinery. The book is dedicated to the late Prof. W. J. Macquorn Rankine, the author of the standard manuals on applied mechanics and civil engineering, whose pupils the authors of this work were. The first edition appeared in two volumes—the first part, by Mr. Thomas Alexander in 1880, and the second, by Mr. Alexander and Mr. Arthur Watson Thomson, in 1883. These volumes have now been wholly rearranged, important matter has been added and the whole published in one volume. It is a consecutive treatise on the subject of internal stresses and strains in its application to the design of earthworks, link-work structures and block-work structures. The method of treatment is modelled on that adopted by Prof. Rankine, but is much more elaborated, graphical methods being combined with the analytical at every point. The book, so far as the subjects with which it deals are concerned, will be of more use than Rankine's to the *practical* engineer student, though the master's is more concise in its language, more comprehensive in its grasp, and will remain the standard work as a scientific treatment of the subject. Messrs. Alexander and Thomson are at great pains to explain everything most clearly to the student, and this can only be done by a great deal of elaboration. One noticeable and most useful feature is a systematic and graduated set of examples to illustrate the application of principles to the practical problems of the engineer; furthermore, the diagrams are to scale, and each suits one of the numerical examples, thus furnishing a student who has little time to draw with the data and checking the results of his constructions to a bold scale without delay.

If we have any general faults to find with the book it is that practical rules and results should have been brought out prominently by some device in printing, and considering the great amount of graphical methods employed a clearly written chapter on graphic statics might have been included with advantage—graphic statics forming now such an important branch of engineering practice and theory.

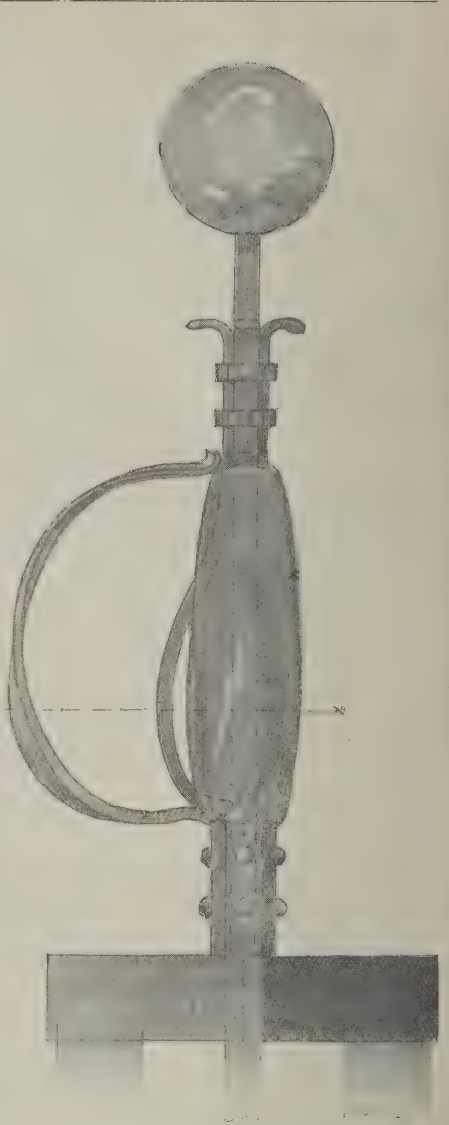
The introductory chapters are of the usual character, except we may mention that Rankine's Ellipse of Stress is dealt with very fully, illustrations being given of a moving model invented by the authors which enables this to be drawn very easily. The application of the ellipse of stress to the stability of earthwork is then described, thus preparing the way for a chapter on the scientific design of masonry retaining walls, several graphical solutions being illustrated. Transverse stress is next dealt with in beams and cantilevers, followed by chapters on bending moments and shearing forces for fixed, combined fixed, and moving loads. Another chapter deals with an ingenious moving model illustrating the bending moments and shearing forces on a girder bridge, due to a locomotive passing over it. Other chapters follow on bending moments and shearing forces due to a travelling-load system, and combined live and dead loads. These should be of considerable service to railway engineers in designing bridges. The resistance to bending and shearing of framed girders and solid beams of various cross-sections is next dealt with. As regards stress at an internal point of a beam, in addition to an explanation of mathematical determination, particulars are given of the method of finding it by the polariscope, as invented by the late Prof. Peter Alexander. There are numerous other chapters on beams, struts girders and trusses, dealing with the subject from every point of view, except roof trusses (apart from an inadequate design in an appendix inserted as an afterthought); this last we trust will be remedied. Finally, the scientific design of masonry arches is very elaborately dealt with.

"Elementary Applied Mechanics," by T. Alexander, M.I.C.E.I., Professor of Engineering, Trinity College, Dublin, and A. W. Thomson. D.Sc., Professor of Engineering, College of Science, Poona. London: Macmillan & Co., Ltd., price 21s.

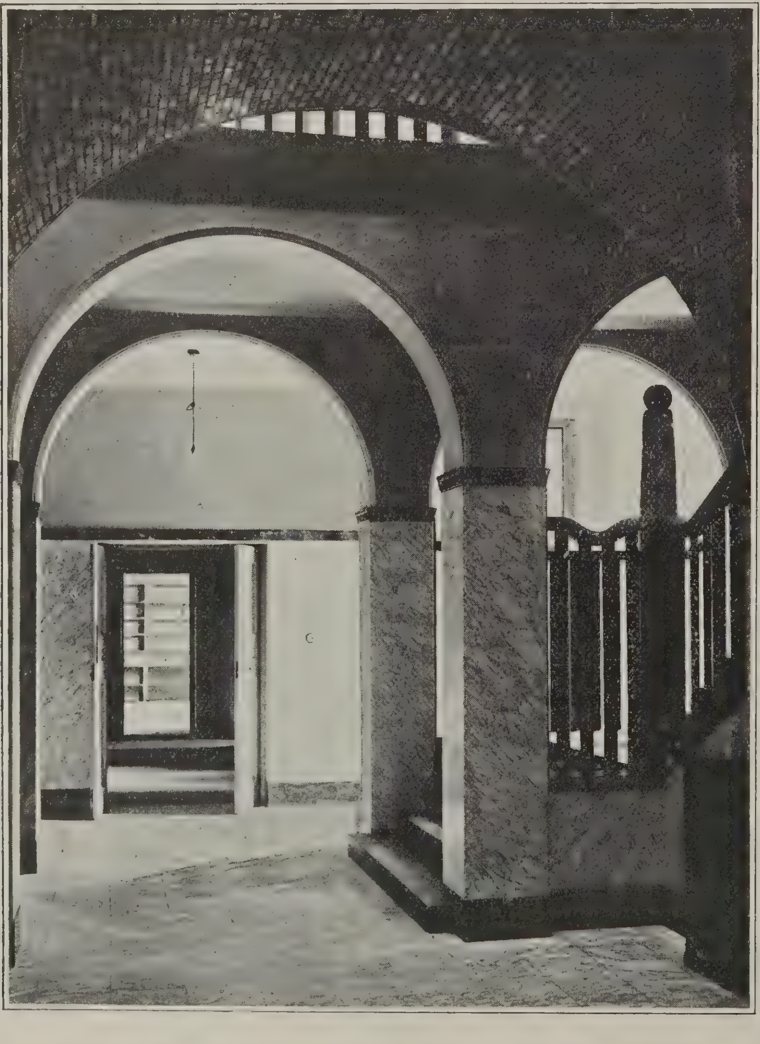
## Paints, Colours and Varnishes.

This only pretends to be a book for elementary or first-year students engaged in studying the manufacture of painters' oils, colours and varnishes at the various technical classes, to prepare them for the ordinary grade course and the prizes and certificates offered by the City and Guilds of London Institute annual examinations. The book serves its purpose admirably, being very clearly written. It is assumed that readers have little or no knowledge of chemistry, and the author devotes himself to describing the ordinary trade processes of colour, paint and varnish manufacture. Most of the other text-books on the subject, however excellent they may be, are not written for the elementary student and thereby mystify and dishearten him; this book is therefore welcome. It does not give, nor pretend to give, comprehensive practical information for everyday use. It is well produced, though we notice several small errors in punctuation and spelling.

"Student's Handbook of Paints, Colours, Oils and Varnishes," by John Furnell. London: Scott, Greenwood & Co., 19, Ludgate Hill, E.C, price 2s 6d. nett.

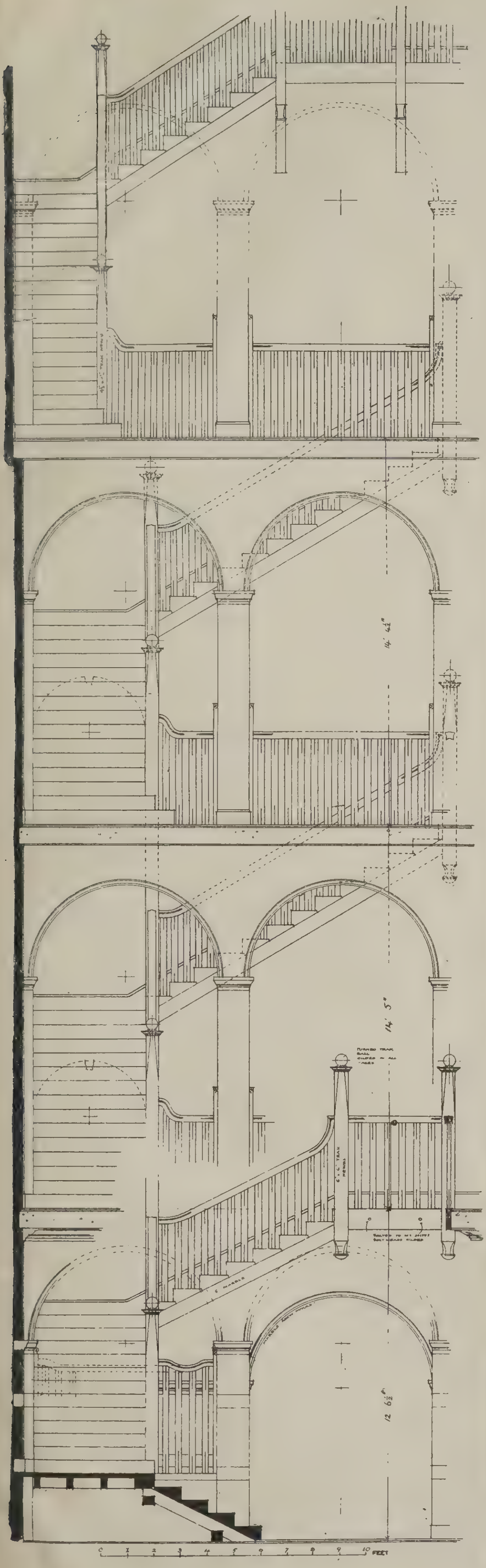


DETAIL OF WROUGHT-IRON RAILING TO FRONT BOUNDARY OF HOSPITAL.



BELGRAVE HOSPITAL FOR CHILDREN: CORNER OF ENTRANCE HALL, LOOKING TOWARDS KITCHEN. H. PERCY ADAMS, F.R.I.B.A., ARCHITECT.

**Restoration at Chartres Cathedral**—The north steeple of the cathedral at Chartres has latterly shown signs of decay, several crevices having appeared, so that the sudden collapse of this unique piece of twelfth-century architecture was feared. The Government architects have now taken in hand its restoration. The "old tower" of the cathedral, surmounted by an octagonal spire, is 350ft. high, being shorter than its sister (built in the sixteenth century by Jean de Beauce), but far more interesting. The late Viollet-le-Duc wrote that it was one of the most interesting examples of architecture in all France, on account of its simplicity, perfect shape and the harmony of its details.



BELGRAVE HOSPITAL: THE MAIN STAIRCASE.

# DEMOLITION OF BUILDINGS.

### New By-laws for the City.

THE great nuisance arising from the demolition of buildings in the City without proper protection for the public has been the subject of an enquiry by the Streets Committee of the City Corporation, whose members have been assisted with suggestions by the Royal Institute of British Architects, the Surveyors' Institution and the Institute of Builders. The result has been the formulation of the following new by-laws:—

(1) Proper hoards shall be erected and fans fixed at the level of the first floor and such other portions as may be directed. That before any pulling down is commenced all windows and other openings in the external walls shall be close-boarded in, unless a gantry be constructed, and the upper portion boarded-in to the full height of the building to be taken down.

(2) The roof of any building shall be removed and the internal partitions and cross walls shall be pulled down floor by floor before commencing to take down any of the main walls of such floors.

(3) Canvas or boarded screens, mats or other suitable appliances shall be used wherever required, and so placed as to reduce the nuisance arising from the escape of dust.

(4) Water shall be laid on and constantly used on each floor by means of jet and hose during the demolition of any building, and all materials shall be freely sprinkled with water to reduce the nuisance arising from dust.

(5) The ceilings and lath-and-plaster partitions shall not be broken down, nor any rubbish, lime, or mortar shot or allowed to fall from floor to floor, or into any basement, within 20ft of a public way, between the hours of 10 a.m. and 6 p.m., except on Saturdays, when it shall be permitted after 3 p.m.

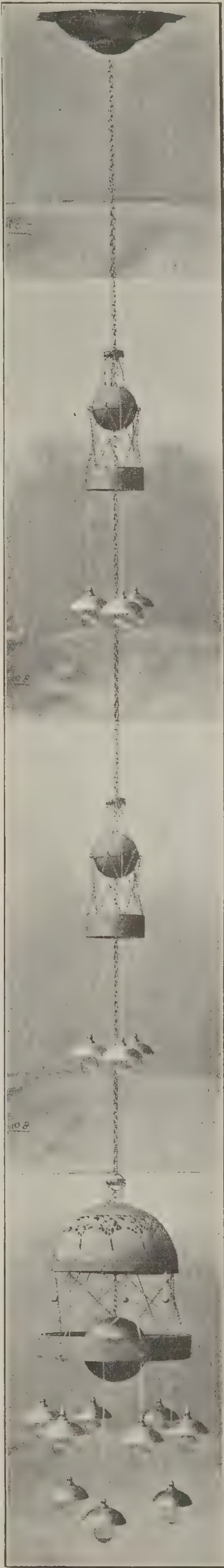
(6) No materials arising from the demolition of buildings shall be basketted, wheeled or loaded into carts, or carted away, between the hours of 10 a.m. and 6 p.m., except on Saturdays, when it shall be permitted after 3 p.m., unless a temporary carriageway entrance or draw-in across the footway has been provided in such a manner as shall prevent any nuisance arising from the escape of dust.

(7) All directions of the engineer shall be strictly complied with.

(8) Every person who offends against any of the foregoing by-laws shall be liable for every such offence to a penalty of £5 for each breach thereof: Provided nevertheless that the justices or court before whom any complaint may be made or any proceeding may be taken in respect of any such offence may, if they think fit, adjudge the payment as a penalty of any sum less than the full amount of the penalty imposed by this by-law.

**A Cigarette Model.**—A Cardiff firm has constructed a cigarette model of the new town hall, and has induced the mayor to make an official inspection of it. The model is 9ft. long and more than 4ft. high. It presents the southern aspect, and there are worked into it more than 25,000 of the firm's cigarettes.

**Competition Reform Society.**—The committee disapproves of the existing conditions of the competition for laying-out land, &c., at Leyland, for the reasons that there is no independent assessor, that the council do not bind themselves to adopt or carry out any of the designs submitted, and that the premium is insufficient. Members are requested to abstain from competing unless they are informed that the conditions have been satisfactorily revised.



STAIRCASE ELECTROLIER.

# ELECTRICITY FOR SMALL HOSPITALS.*

### By W. NOBLE TWELVETREES, A.M.I.E.E., M.I.M.E.

ALTHOUGH electric light is now fairly universal in large hospitals, it is too seldom adopted in small institutions situated in more or less remote districts where public supplies of electricity are not available, and in many small institutions where the engineering equipment is of very limited character. Moreover, the convenience and economy of electricity for the provision of power and heat in hospitals are still inadequately recognized.

In districts where current is obtainable from the systems of municipal or industrial corporations it may often be thought advisable to buy the current required. Charges for lighting are almost invariably based upon what is termed the "maximum demand system," according to which the rate for the first hour is generally double the rate for succeeding hours. This method has the effect of levying from all consumers a fair proportion of expenses incurred over and above the actual cost of energy at the works, and it also has the advantage of encouraging the consumption of current for a greater number of hours.

The following table shows fairly well the rates prevailing in towns where local conditions are essentially different:—

*Charges for Light and Power in 1902, in Pence per Board of Trade unit.*

| Place. | Light. | Power. | Average (Nett). |
|---|---|---|---|
| Huddersfield - - | 4·5 | 2·5 & 1 | 3·75 |
| Hull - - - | 5 & 2 | 2·0 & 1 | 3·80 |
| Northampton - - | 6 & 3 | 2·0 | 4·70 |
| Worcester - - - | 4·7 (average | 3·48 (average) | 3·77 |

While the general average is only 4·00d. per unit, considerably more is payable for energy used for lighting, and inspection of the figures shows clearly that the purchase of current is less advantageous for hospitals where electricity is employed for lighting alone than for those where it is utilized in the provision of both light and power. In the case of a public hospital, the equipment of a generating station involves no liability in respect of rent, rates and taxes, and its operation adds practically nothing to the cost of management. All modern hospitals possess steam boilers and auxiliary plant, and thus the motive power for generation can be furnished at far less cost than in an establishment where boilers have to be specially worked for electrical machinery. The cost of attendance will be very little increased, or may not be increased at all. It is a generally accepted rule that a given product cannot be manufactured so economically in small establishments as in large works, but so far as electricity is concerned there is reason for anticipating that the cost rate per unit in a public institution should be less than the average sale price charged by electricity supply corporations.

We will next enquire into the probable cost of producing energy in a hospital generating station. In the first place it may be convenient to define the machinery and appliances required, and to indicate the relation between capital expenditure and output.

The absolute essentials of a generating plant are the following:—

(1) Prime mover—furnishing motive power by the agency of steam, gas or oil.

(2) Dynamo—generating current at the required voltage.

(3) Main switchboard—for the regulation and distribution of current.

To these it is usually desirable to add:—

(4) Storage battery—the cells varying in number with the required voltage, and in capacity with the discharge in ampere-hours.

Steam and other engines are now provided with such efficient means of control, and dynamos are made to run so steadily, that the storage battery is not so much a necessity as a convenience. In hospitals where electric energy is simply used for lighting, the generating set is, or ought to be, quite separate from the engine employed for driving laundry and other machinery, and the installation of a battery permits the storage of electricity during the day, when steam can conveniently be spared. Thus the generating plant need only be operated for a few hours daily, and current required in the evening can be drawn entirely from the battery. In cases where energy is applied both for light and for power the battery can be slowly charged throughout the day, and used (either alone or in conjunction with the generator) for carrying the evening load. As the voltage required for charging a battery is about one-third more than the normal voltage, it is evident that some means of adjustment must be provided if charging is to be conducted while the generator is being used for other purposes. The most satisfactory method is to add a machine of the type known as a "booster," which is capable of raising the voltage of current from the ordinary circuit to the voltage necessary for charging. As usually made, the booster consists of a small dynamo and a motor of suitable power, combined to form a self-contained and very compact machine. The booster is also made without the motor, and in this form it can be driven from the shaft of the main generator, or in any convenient manner. In special cases where highly fluctuating loads occur, owing to the sudden starting of machines absorbing considerable amounts of power for a few moments, a booster can be applied in connection with a small regulating battery and so connected that the average current of the variable load may be supplied as a constant load, the battery being charged while there is little or no demand for power, and discharged heavily when the momentary strain comes on; thus adding to the normal supply from the booster sufficient current to meet the augmented demand. Such an arrangement prevents injurious shocks in the generating set and various unsatisfactory disturbances of the service generally.

For the purpose of affording a basis for calculation I will take a small power station recently equipped under my direction. This installation was designed simply for lighting, but it would be quite capable of dealing with a moderate power-load in addition. The capacity of the plant is 10 kilowatts, or 100 amperes at 100 volts; which is sufficient for the continuous supply of 155 sixteen c.p. lamps. The storage battery has a capacity of 216 ampere-hours when discharging in six hours, and the rate of discharge is then 36 amperes per hour. This capacity is sufficient for the present requirements of the institution, and is equivalent to an annual output of about 8,000 Board of Trade units. Motive power is provided by a quick-revolution vertical engine operating a belt-driven bipolar continuous-current dynamo, and steam is furnished from the boiler provided for the general supply of heat and power for ordinary purposes. The cost of the machinery and plant, erected in working order, was £475; but to this should be added the amount of £100 to cover the increased cost of boilers, owing to the higher pressure necessary for the electric-light plant. The total capital expenditure is thus brought up to £575.

In considering the further outlay required to make the plant available for power as well as for light, it is only necessary to add the cost of providing and fixing a booster, sa £100; as the value of the laundry engin and auxiliaries is about the same as that o the electric motor and fittings that would b required instead. Thus, £675 represents th total capital value of the plant for light an power. If fully employed for light an power during five days a week, and for ligh alone during the remaining two days, th annual output would become 23,000 units.

Calculated upon the amounts stated above the annual repayment of principal with interest at 3 per cent., extending over twent years, would be £40 for lighting alone, o £47 for light and power. The amount to b included in the total cost of energy o account of repayment and interest is consequently 1·2d. per unit in one case and 0·5d per unit in the other.

In a steam plant, coal is the chief item fo consideration. Taking the consumption a 7lbs. per brake horse-power, or, say, 10lbs. per kilowatt, the cost with fuel at 15s. pe ton comes out at 0·8d. per unit. Water and engine-room stores may be put down a 0·07d. per unit; an increase of 1s. a day in the engine-driver's wages would represent 0·55d. per unit on the output of 8,000 units, or 0·2d. per unit for the output of 23,00 units. Including 5 per cent. on the value o the plant for maintenance and repairs, and including also the items in respect of repayment and interest, we have the figures stated in the following table:—

*Estimated Cost of Electrical Energy in Hospital Installation, in Pence per Board of Trade unit.*

| Items. | Light only. | Light and Power. |
|---|---|---|
| Fuel - - - - - | ·80 | ·80 |
| Water and Engine-room Stores | ·07 | ·07 |
| Attendance (extra) - - | ·55 | ·20 |
| Maintenance - - - | ·75 | ·37 |
| Works cost - - | 2·17 | 1·44 |
| Repayment and Interest - | 1·20 | ·50 |
| Total cost - - | 3·37 | 1·94 |

Results such as these are only to be attained if the entire plant is properly designed and managed. The efficiency of all details must be considered, and capacity must be duly proportioned to the required duty. The boiler plant must be designed so that perfect combustion of the fuel may be secured, stoking should be effected by mechanical means, and the excess heat contained in the furnace gases should be utilized by the employment of fuel economizers. Every available means should be adopted for utilizing exhaust steam and condensation water, and loss of heat from the surfaces of the boilers and steam pipes should be minimized by suitable non-conducting material. Unless precautions such as these be taken, the cost of electricity will be materially increased, although it is most likely that no accounts will be forthcoming to demonstrate the fact.

So far as structural work is concerned, very little outlay is involved in the application of electrical plant in a hospital. In new buildings the dimensions of the ordinary boiler-house need not be increased, unless space has been unduly economized; an engine-room of average size will be ample for the generating set and main switchboard, but space must be found for the accommodation of the storage battery. The battery-room must be well ventilated in such a manner that acid vapour may be discharged at a sufficient distance above the roof. The floor should be asphalted or tiled and made with a suitable fall to prevent the accumulation of water, and the interior walls, roof and timber fittings should be protected with acid-proof paint. In existing buildings, where boilers are already provided, it will generally be necessary to extend the boiler-house to afford space for the addition of

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* Summary of a paper read before the Congress of the Sanitary Institute at Bradford

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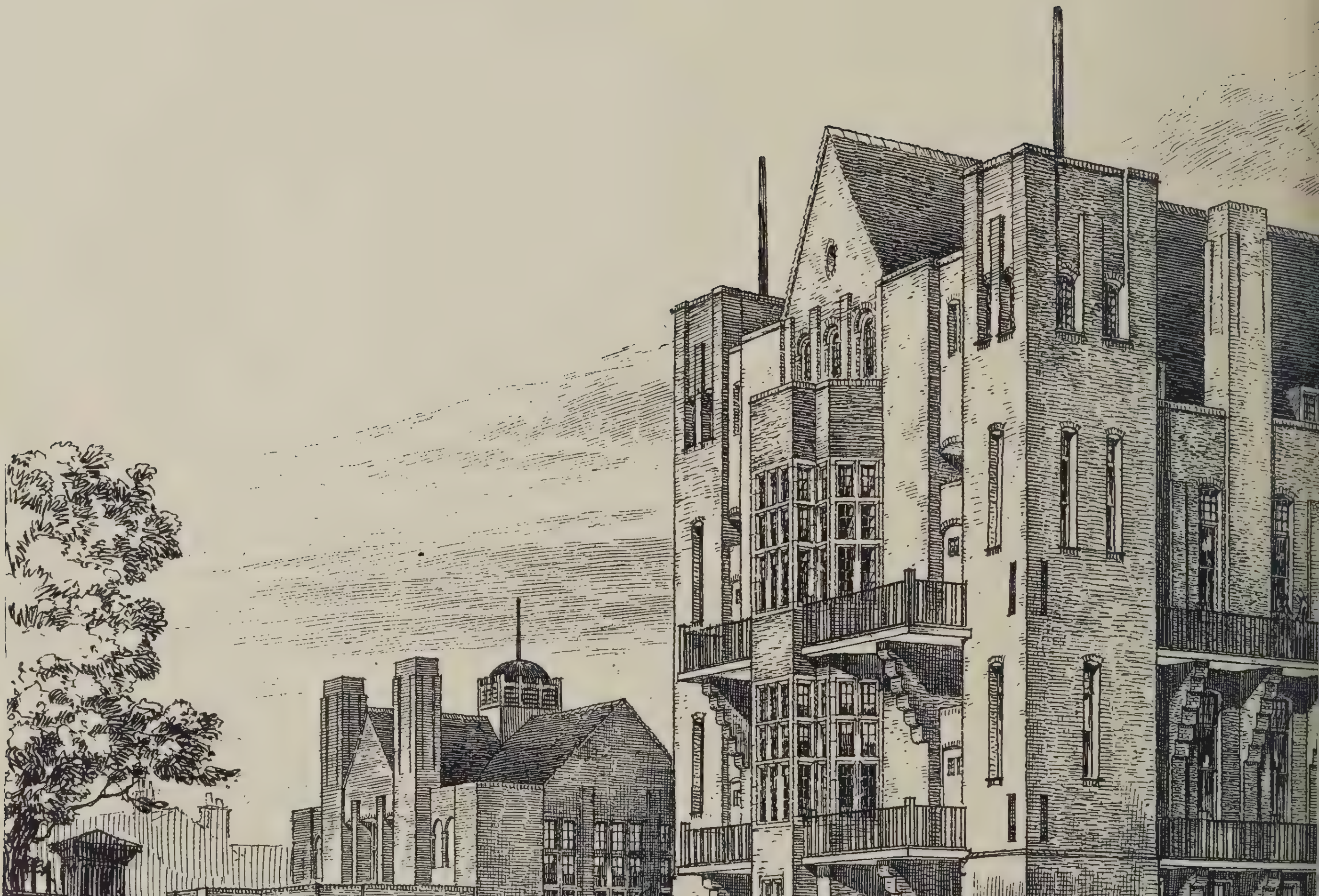
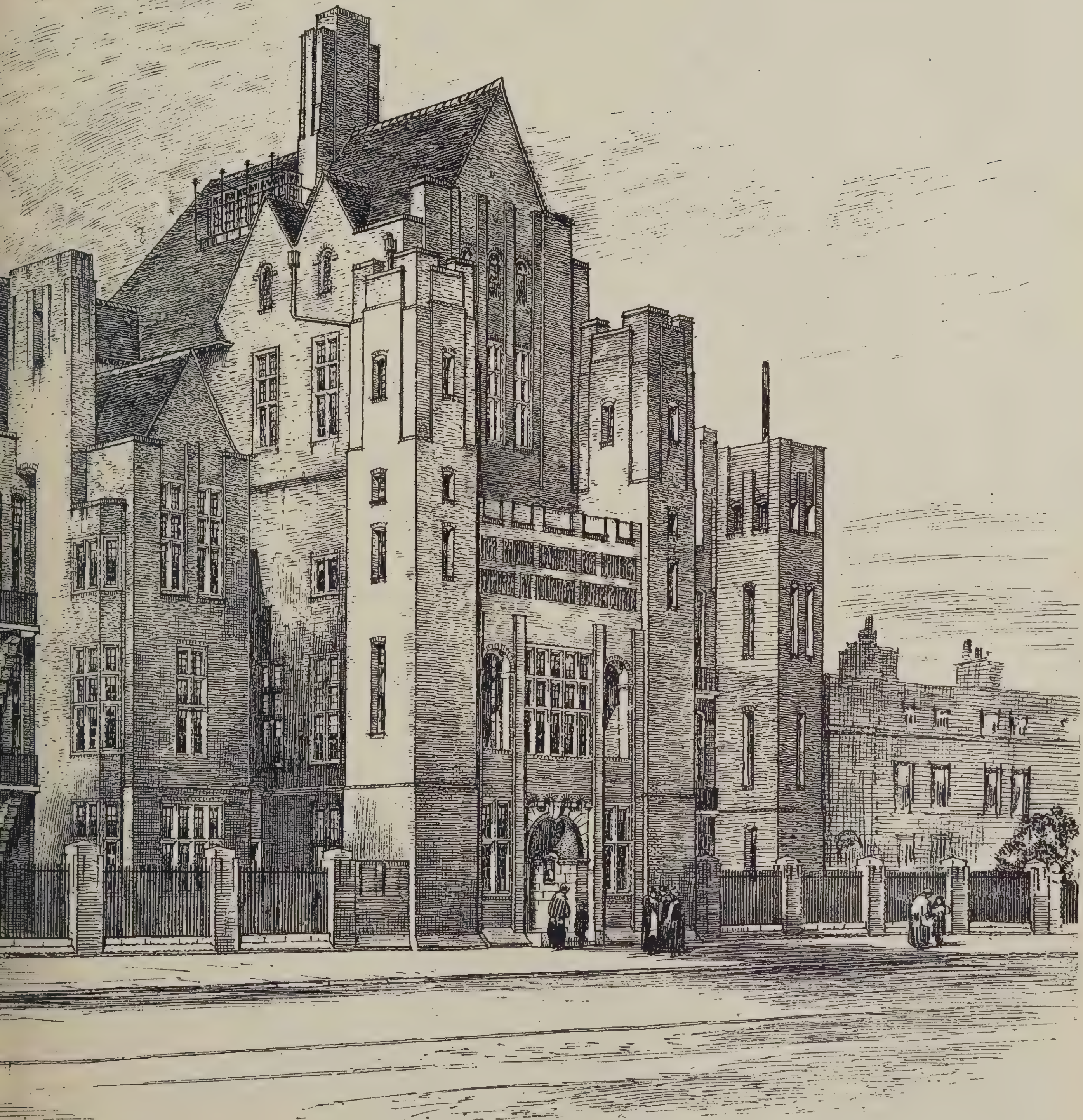


THE BELGRAVE HOSPITAL FOR CHILDREN, CLAPHAM



"PHOTO-LITHO." R. J. EVERETT & SONS, 58 LUDGATE HILL, E.C.

LONDON, S.W. H. PERCY ADAMS, F.R.I.B.A., ARCHITECT.

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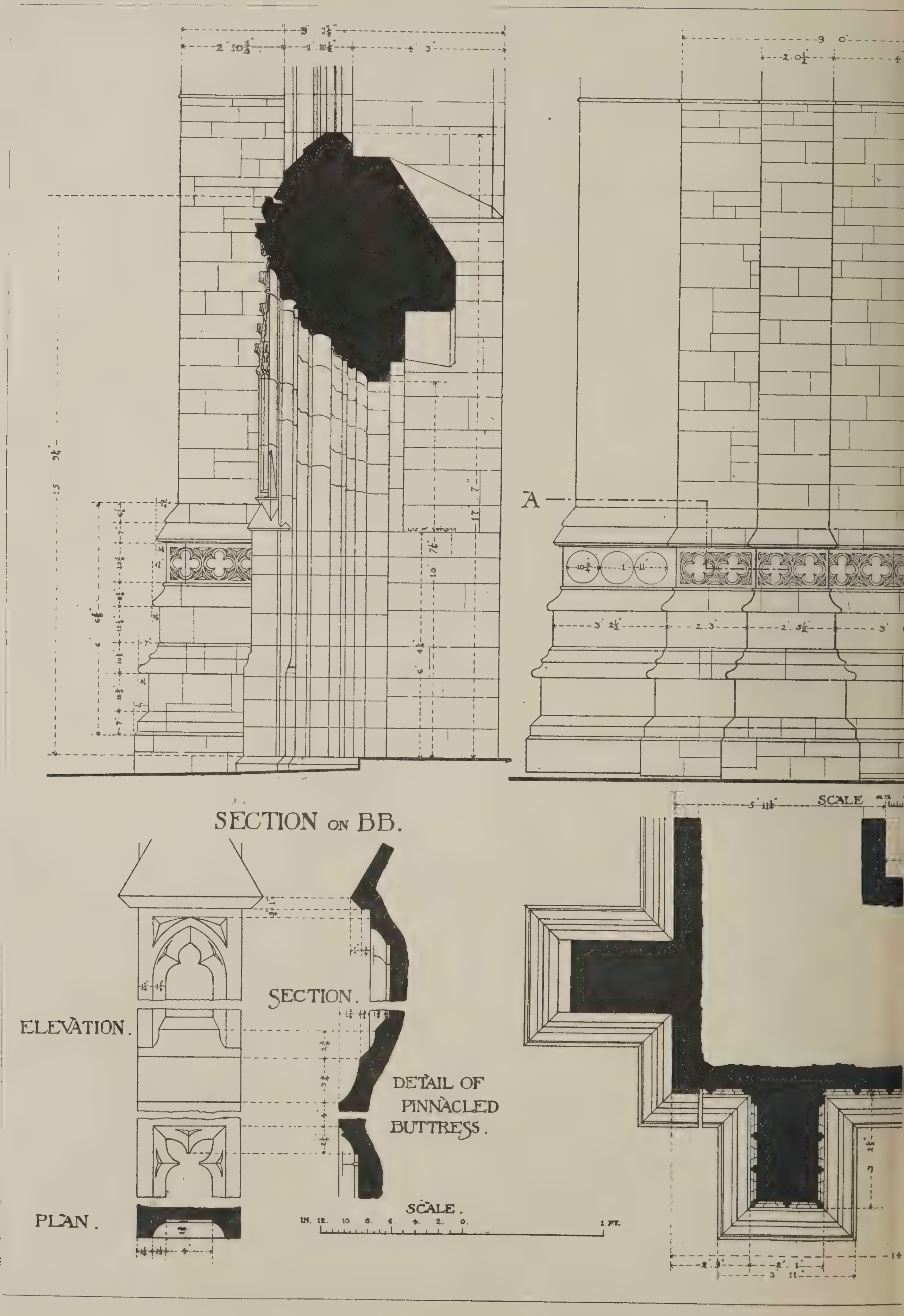
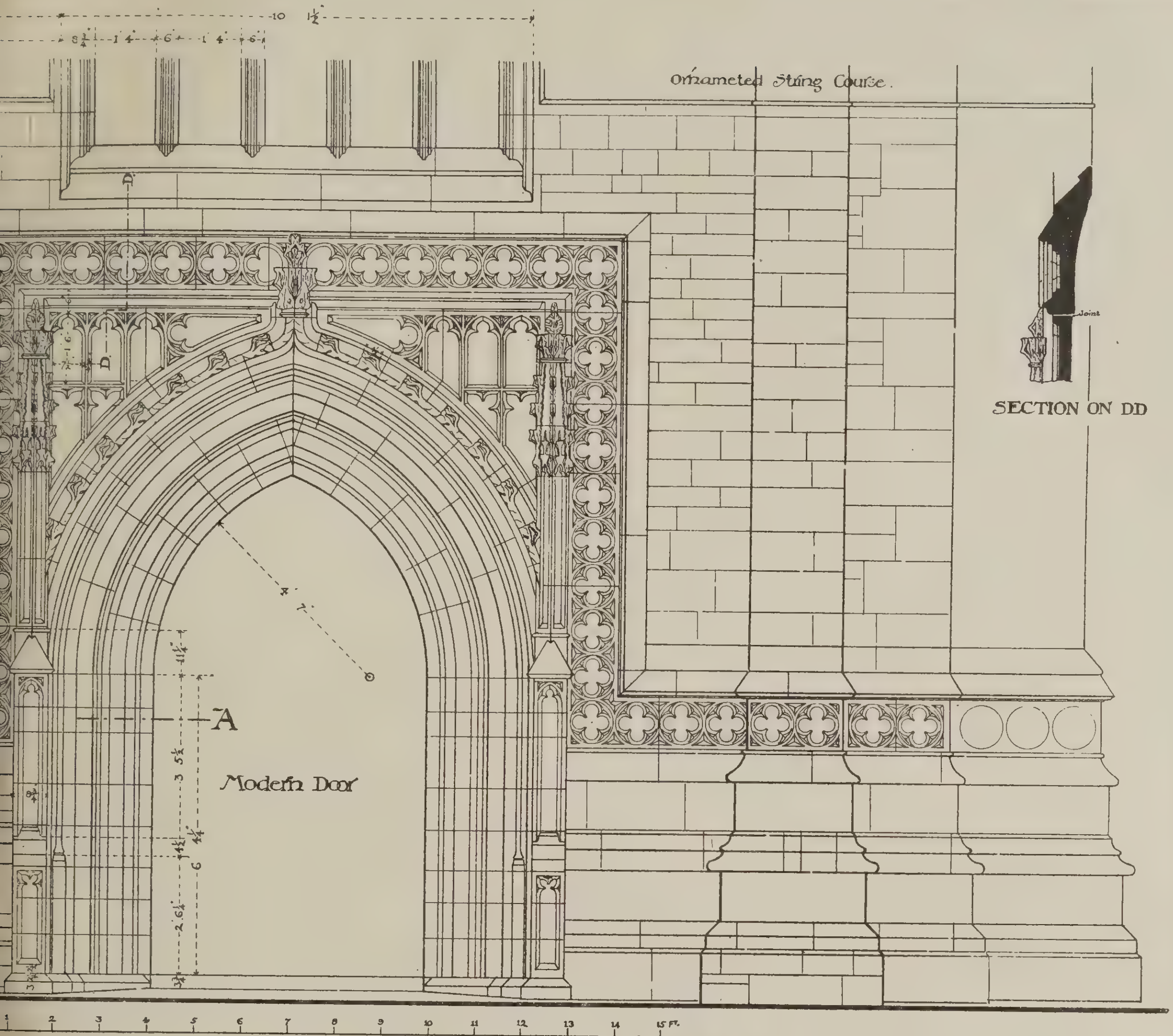
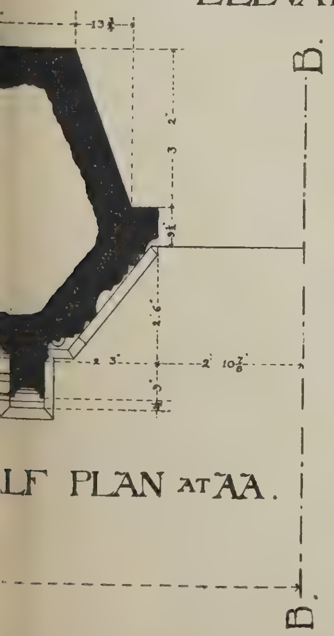


KETTERING CHURCH, NORTHANTS: DETAIL OF WEST

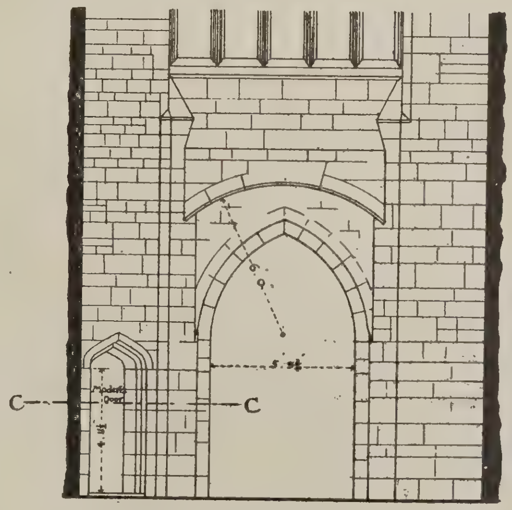


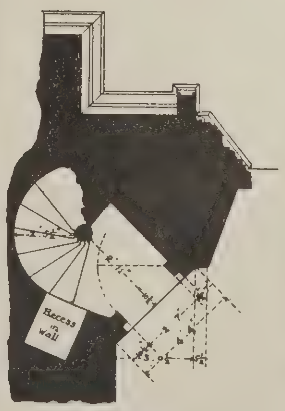
## ELEVATION

## SECTION ON DD



## LF PLAN AT AA.





## PLAN AT CC.

## INTERNAL ELEVATION.

SCALE.

Measured and Drawn by L. M. Gotch.

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*Estimated Cost of Electrical Energy in Hospital Installation, in Pence per Board of Trade Unit.*

| Motive Power | Cost of Production. | | | |
|---|---|---|---|---|
| | Plant partly used. | | Plant fully used. | |
| | Works cost. | Total cost. | Works cost | Total cost. |
| Steam engine; coal at 15s. per ton | 2·17 | 3·37 | 1·44 | 1·94 |
| Gas engine; gas at 2s. 6d. per 1.000 cub. ft:— | | | | |
| Average consumption | 2·27 | 3·47 | 1·54 | 2·04 |
| Maximum ,, | 2·49 | 3·69 | 1·76 | 2·26 |
| Oil engine; oil at 4d. per gallon | 1·97 | 3·17 | 1·24 | 1·74 |

*Cost of Gas and Oil for Direct Lighting, in Pence, for a Quantity producing the same c.-p. as One Board of Trade Unit of Electricity.*

| Illuminant. | Average of Various Burners | Batswing Burner. | Argand Burner. | Incandescent Burner. | |
|---|---|---|---|---|---|
| | | | | New. | At 300 hours. |
| Gas at 2s. 6d. per 1,000 cub. ft. | 1·54 | 2·61 | 2·30 | ·56 | ·75 |
| ,, 3s. 0d. ,, ,, | 1·82 | 3·1 | 2·76 | ·67 | ·80 |
| ,, 3s. 6d. ,, ,, | 2·14 | 3·6 | 3·23 | ·78 | 1·05 |
| Oil at 4d. per gallon | 1·12 | — | — | — | — |

another boiler. If this should be impracticable, or, owing to exceptional circumstances, undesirably expensive, it may be advantageous to leave the boiler-house as it stands and to make use of a gas or oil-engine for the provision of motive power.

The internal combustion motor has several advantages which commend it for use in connection with electric generators. In places where steam is not required for other purposes, this type of engine provides power more cheaply than the steam-engine, and one great advantage it possesses is that of adaptability to intermittent work. When the engine is stopped the consumption of fuel instantly ceases, whereas in the case of the steam-engine there is continuous waste of fuel during the intervals of work. Hence the internal combustion motor is particularly suitable for very small institutions, where the general demand for steam is of limited extent.

Only a year or two back the running of the gas-engine was far from satisfactory, but at the present time several well-known firms are making special types of electric-light engines that give a perfectly steady current without the application of a fly-wheel to the dynamo, as was formerly necessary. Another improvement is to be found in the diminished consumption of gas, and various engines are now to be obtained in which the volume required per brake horse-power is between the limits of 15 cub. ft. and 25 cub. ft. per hour. As our attention is devoted particularly to electricity for small hospitals, we will take the consumption of gas at the upper limit of 25 cub. ft. per b.h.p., or, say, 37·5ft. per kilowatt. With gas at 2s. 6d. per 1,000 cub. ft., the cost of energy works out at about 1·12d. per unit. Substituting this value for the cost of coal given in the foregoing table, we find that the total cost of generating energy in a gas-driven plant to be 3·69d. per unit for light alone, or 2·26d. per unit for light and power. At the average rate of 30 cub. ft. per kilowatt, the cost of production would be 3·47d. in one case and 2·04d. in the other. No alteration is necessary in the item referring to repayment and interest, because the higher cost of the gas-engine practically balances the saving in respect of the amount allowed for increased boiler power.

The oil-engine offers another alternative to steam for the generation of electrical energy. In many parts of the country it will be found more convenient and more economical than the gas-engine. For small country hospitals, where no public supply of gas is available, the oil-engine often presents the most economical means of providing motive power for the generation of electricity. In design the oil-engine is practically the same as the gas-engine, with the addition of a vapouriser at the end of the cylinder. Any common form of petroleum oil may be used. The consumption in well-designed engines, as small as 7 brake horse-power, is not more than 0·82 lb., or one-tenth of a gallon, per brake horse-power. Allowing 1·2lbs., or 0·15 gal. per kilowatt, the cost of oil at 4d. per gal. does not exceed 0·6 per unit of energy produced. Substituting this value for the cost of coal as stated in the table given, we find the total cost of energy from an oil-driven plant to be 3·17d. for light alone or 1·74d. for light and power. As before, no alteration has been made in respect of repayment and interest, as the value of the plant remains practically unaltered.

A comparison between the efficiency of oil used for direct lighting and for lighting by electricity through the medium of an oil-engine shows that a considerable advantage follows the latter.

Another form of fuel which is rapidly coming into general use for internal combustion engines is known as producer or power gas, a product which is destined to effect great changes in existing methods of developing power. In some parts of the country arrangements are already being made for the distribution of this gas on a large scale, and as it can be produced from the cheapest forms of fuel the sale price will probably not exceed 2d. per 1,000 cub. ft. Allowing for the lower calorific value of this product, which is about one-fourth that of coal gas, the equivalent cost would be about 8d. per 1,000 cub. ft. In a plant of the size previously defined the use of power gas would reduce the cost of fuel to about 0·2d. per unit, and the cost of electricity to about 2·77d. per unit for light alone, or to 1·34d. per unit for light and power.

Some of the general results already ascertained are summarised in the tables above.

It will, of course, be understood that these figures are merely intended to represent the cost of energy at the switchboard, or of illuminating material at the point of distribution. The figures relative to the generation of energy apply particularly to the installation which has been taken by me as fairly representative of a small hospital plant, and although variations of output and working conditions have been considered the results are not of universal application. Hence, it is impossible to institute an exact comparison between the calculated cost of electricity per unit and the equivalent cost of gas and oil. Nevertheless, we may fairly assume that similar ratios will generally exist between the cost of the various methods of producing power and light.

The following conclusions may be drawn from the foregoing investigation:—

1. That electrical energy can be generated in a hospital of moderate size, even under unfavourable conditions, at a cost considerably lower than the average rate charged by public supply corporations.
2. That economical production is greatly aided by utilization of the generating plant for power as well as for light.
3. That under favourable conditions energy can be generated at such cost that electric lighting becomes less costly than direct gas-lighting when ordinary burners are employed, although more costly than gas lighting by incandescent burners and more costly than direct lighting by oil-lamps.
4. That in view of its deleterious effect upon the atmosphere, the combustion of gas and oil for the direct lighting of hospitals is distinctly inadvisable; and that these substances may be more advantageously employed in providing motive power.
5. That the facilities offered by modern gas- and oil-engines are such as to place electricity within the reach of all hospitals, for which the outlay upon generating plant has hitherto been regarded as unjustifiably heavy.

## PAINTED IRONWORK.

IN an article on the cheapest paint which appears in the current issue of "The Decorator" Mr. J. Cruickshank Smith, B.Sc., F.C.S., gives the following table of the relative cost of various paints, on a twenty years basis (calculated from the figures given by Mr. G. H. Hurst that 10lbs. of white lead will cover 648 sq. ft. of iron; zinc white, 1,134 sq. ft.; red lead, 477 sq. ft.; and red oxide, 870 sq. ft.: the paints are understood to be supplied ready for the brush and to be made with special reference to the purpose for which they are to be used):—

| — | White lead. | Zinc white. | Red lead. | Red oxide. |
|---|---|---|---|---|
| Covering capacity in sq. yds. per cwt. | 806 | 1,411 | 594 | 1,083 |
| Price per cwt. | 32s. | 56s. | 32s. | 28s. |
| Cost (in shillings) per 100 sq. ft. | ·44 | ·28 | ·60 | ·28 |
| Times painted in twenty years. | 5 | 5 | 3 | 7 |
| Cost in shillings per 100 sq. ft. for twenty years. | 2·20 | 1·40 | 1·80 | 1·96 |
| Relative economic value on twenty years' basis, the highest value being represented by 100. | 64 | 100 | 77 | 71 |

Let us suppose that in the above table the figure under zinc white, representing the number of renewals necessary in twenty years, be written 7 instead of 5. Then the cost per 100 sq. ft. for twenty years will be 1·96 in place of 1·40, and the economic value of zinc paint will be brought down under that of red lead and equal to that of red oxide; yet between the prime cost of materials in the case of red oxide and zinc white there is on our assumed price a difference of 8s. per cwt. This shows the fallacy of laying undue stress on the cost of the paint.

We have to make a distinction between the durability of the surface of the paint and its preservative action on the metal beneath. It is a well known fact that many paint films may present a comparatively perfect appearance from the outside while the metal beneath is corroded in a marked manner. It is herein, no doubt, that those who advocate oxide of iron paint as the preservative *par excellence* of ironwork have been led astray. Oxide of iron can be made into a paint which will preserve its continuity of surface and general appearance of durability from the outside for very considerable periods, but underneath the surface the corrosive action may be proceeding rapidly.

## Builders' Notes.

**The Truro Master-Builders** have decided to advance the wages of carpenters 2s. per week, commencing from September 1st.

**A Norwich Builder.**—In the issue for August 8th of "Daylight," a weekly journal published in Norwich, an article appears on the firm of Mr. J. S. Smith, president of the Norwich Master-Builders' Association, under the heading "Men who have made Norwich." Mr. Smith first started in business in 1873, and since then has carried out a very large amount of work.

**Vauxhall Bridge.**—After much vexatious delay the London County Council are now asking for tenders from contractors, engineers and others for the supply and erection of the steel superstructure and the upper portion of the granite piers and abutments of the new bridge at Vauxhall, and the execution of sundry other works in connection. The last day for tendering will be Tuesday, October 6th.

**An American View of the Building Trades' Exhibition.**—A writer in the "Iron Age" of New York suggests that the building trades' exhibition is worthy of imitation in America. "I am inclined to think," he says, "that a large general exposition is, for commercial purposes, of but little use. But an exhibition for a special purpose is quite another story. Here the outsider, on the whole, is kept out, and all those who visit are directly concerned with the exhibits."

**Sanitary Regulations.**—The special report of the Select Committee, to which were referred all private Bills promoted by municipal and other local authorities by which it is proposed to create powers relating to police or sanitary regulations in conflict with, or deviation from, or excess of the provisions of the general law, was issued last week as a Parliamentary paper. The Committee considers that much greater care should be exercised in the preparation of these Bills, and in particular that the extent of powers existing under the public general law should be ascertained by promoters before they apply for special powers which in many cases are wholly unnecessary.

**Messrs. Manlove, Alliott & Co., Ltd , of Nottingham,** have just completed an important contract for the erection of a combined refuse destructor and power plant for the corporation of Nottingham, at which the steam power raised from the burning of refuse is utilized for generating electricity for some of the tramcars running in the city. A similar plant is in course of erection by the same firm, also for the Nottingham Corporation, which will then have three installations put up by Messrs. Manlove, who are also erecting destructor installations for Birmingham, Eastbourne, Wolverhampton and Liverpool. At this last-named city between 15,000 and 20,000 Board of Trade units will be generated per day (when the new installation is in full work) from steam raised from refuse burned in the destructors. Cambridge is another example of what can be done with refuse in properly designed destructors and power plants. Here the steam is employed to drive the pumping engines, which are frequently called upon to raise over 3,500,000 gals. of sewage per day to a height of 50ft., and to deliver it to the sewage farm more than two miles away. This firm have brought out a new destructor for small towns, the first of which has been erected at Loughborough; it is capable of burning more than a ton of refuse per hour, and its capacity is thus in proportion to the number of hours it works—for example, ten tons per day, ten hours' work; twenty tons, two shifts, ten hours each. We understand that orders for several of these plants, including Grantham, Newmarket, &c., have recently been placed.

**Messrs. Easton & Co., Ltd.,** of Broad Sanctuary Chambers, London, S.W., have just issued the A B C railway guide enclosed in an attractive cloth cover bearing particulars of their well-known lifts, the output of which has trebled during the past year. We understand that it is Messrs. Easton's intention to provide their customers with this guide, free of charge, from time to time.

**The Building Trade.**—Employment continues moderate and shows little change as compared with either a month or a year ago. The percentage of unemployed trade-union members among carpenters and joiners was 3·3 at the end of July, compared with 3·4 at the end of June and 2·9 a year ago. The percentage for plumbers was 6·7 at the end of July, as compared with 7·6 in June and 6·5 in July, 1902.

**In Case of Fire in the Tubes.**—Taking a lesson from the recent calamity in Paris, Captain Hamilton, the Chief Officer of the Metropolitan Fire Brigade, has directed the officers in charge of all fire stations in the vicinity of tube railways to furnish him with an account of how they would act in the event of an underground railway fire, more especially if it occurred midway between two stations.

**Fire Tests.**—The British Fire Prevention Committee's operations for the summer season closed recently with two tests with some armoured wood doors and an armoured concrete floor. The doors were tinned steel-clad, and were constructed in Manchester, one being a sliding door and one a hinged door. They were tested for an hour and a half under a severe fire, the highest temperature being over 1,800 degs. Fahr. The sliding door offered substantial resistance against the fire. The floor test was with a composite floor of fine concrete, strengthened by steel bands, constructed by a Swiss firm. The floor was subjected to a test of one hour and three quarters, the temperature rising to 1,800 degs. Fahr., when the floor collapsed. Of other tests now in the report stage is one with another pair of similar armoured doors: also with a floor of Australian karri wood and a thin partition by a Dutch firm. All the reports will be issued in due course, and henceforward the metric system will be found in the committee's reports as well as our own system of weights and measures, this being in accordance with a resolution passed at the International Fire Prevention Congress.

**The Building Trade in South Africa.**—The Rand demand for building material is reported as heavy as ever, and prices show an upward tendency. This is especially true of flooring, ceiling and deals, the demand for which is still greater than the supply, though the new 10 per cent. duty is about equalized by the reduction of railway rates. New buildings, both large and small, are under contemplation, and contractors at Johannesburg and other inland and coast centres have every prospect of being fully employed for a long time to come, while the demand for material is likely to increase rather than diminish. Artistic house furnishings and hardware are required for this market in especially large quantities. Cape Colony's imports from all sources during the first five months of the present year were £2,730,000 more in value than during the corresponding period of 1902—in other words, a rise of nearly 2¾ millions sterling on less than half a year's trade. Cement was imported to the value of £63,000 as compared with £36,000 during the corresponding months of 1902; paints and colours £70,000 as against £36,000; iron and earthenware pipes £69,000 as against £66,000; and wood (including furniture, &c.) £899,000 as against £504,000. Trade in various items of building materials was nearly doubled. Transvaal trade returns for the same period show even a higher proportionate advance, though totals are smaller.

## Electrical Notes.

**Victoria Square, Liverpool,** is proposed to be lighted by electricity, incandescent lights being suggested for the sixty corridors of the great tenement and arc lamps for the open courtyard.

**Profitable Electricity.**—During the past year the Brighton Corporation made a nett profit of £7,985 at the electricity works.—At Newcastle-on-Tyne on the year's working of the Corporation tramways there has been a total revenue of £153,822 and a gross profit of £64,509.

**German Electrical Machinery Trade.**—So far as the year has gone, there has been a noticeable falling off in the importation of foreign electrical machinery into Germany, the returns for the five months ending with May last showing a total of only 322 tons, as contrasted with 634 tons in the corresponding period of last year. On the other hand, there has been an increase in the exports of electrical machinery from Germany—from 4,899 tons during the first five months of 1902 to 5,158 tons during the five months ending May last.

**Johannesburg's Electric Tramways.**—The Tramways Committee of Johannesburg recommends the acceptance of the Brush Electrical Engineering Co.'s tender for grooved and Vignoles rails and fish-plates, of Belgian make, at £74,549, with 2½ per cent. discount. The British tenders for these articles are considerably higher. In the course of an interview the municipal engineer said that if British manufacturers insisted on prescribing the quality of the goods which they are willing to supply, instead of making what their customers asked for, they could hardly complain if they failed to secure orders.

**Notes on Electric Motors.**—As the result of twenty years' experience, Messrs. Laurence, Scott & Co., Ltd., of Norwich, have just issued some thoroughly up-to-date notes on electric motors. They are confined to continuous-current motors, these being far the most extensively used where distances are not great. Alternating or three-phase motors have the advantage of not needing a commutator, which enables them to be used with higher voltages; but the design and construction of commutators have been so much improved of late that for ordinary work this advantage does not amount to much and continuous current motors quite hold their own. Dynamos and motors, it should be remembered, have only been in use for a little over twenty years, but during that time they have been developed to a remarkable extent. To-day the tramway motor is particularly free from defects. We have not the space to deal with all the various details set forth in this booklet. We should like, however, to quote from the chapter on "Voltage." Six or seven years ago it was not possible to get good incandescent lamps for more than about 110 volts. Now it is possible to get fairly good lamps up to 250 volts, though something between 200 and 220 is probably a better limit. Supply companies use the three-wire system, which enables them to distribute their electricity at twice the voltage used for incandescent lamps. This system consists simply in running a good heavy conductor between the two outer conductors and connecting the lamps (or small motors) between the two on either side; thus any current used on one side of the centre conductor is balanced on the other side before it flows very far. When distances are great, a considerable saving of copper in the mains is effected by this means. The necessity, however, for dealing with the unbalanced current at the central station makes it undesirable to use this system in private installations unless they are very extensive.

# Bricks and Mortar.

**Aphorism for the Week.**

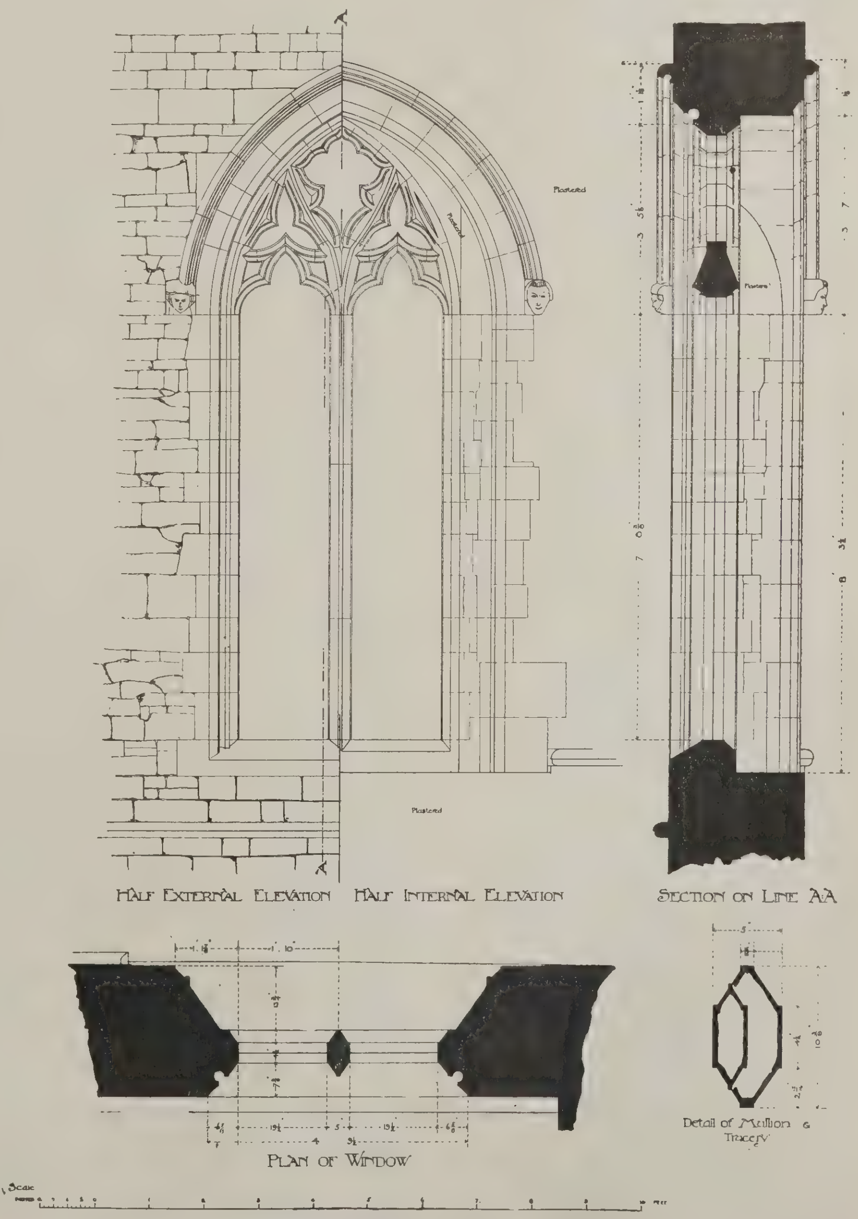
*Blessed is the man who has found his work.*—CARLYLE.

**Our Plates.** THE Belgrave Hospital for Children is the subject of an article in another part of this issue.—The tower and spire of Kettering Church, Northants (date about 1450), afford a very fine example of Perpendicular work. The tower is beautifully proportioned and tapers upward very gracefully. The castellated turrets at the angles are unusual; they give a most effective finish to the tower and are invaluable to the composition of the whole. The tower and spire are of equal height, the stone of the former being darker than that of the latter, a fact which has led to the supposition that the spire is of a later date; but there is nothing to justify this, and a close examination shows that the workmanship and details are identically the same. The stone is probably Barnach Rag, although it is generally supposed to be Heldon. The masonry is a perfect specimen of careful workmanship and is in excellent condition. The body of the church is of coursed rubble with dressings of Barnach Rag, and is late Perpendicular with the exception of the chancel and the north doorway, which belong to the Early English period (about 1200). Internally, the tower arch, which is 27ft. to the soffit, is a striking feature, and the nave arcade is good. Unfortunately there are no records of the church, and consequently nothing is known of its history except by conjecture. The measured drawings reproduced are by Mr. L. M. Gotch, of Kettering.

**New Naval Barracks, Portsmouth.** THE new Portsmouth Naval Barracks, which have superseded the olden wooden hulks that for nearly fifty years housed the naval depôt, have been constructed, under the direction of Sir Henry Pilkington, on the site formerly occupied by the Anglesey Barracks and the old convict prison. The new barracks will accommodate 4,000 officers and men, and, with the large parade ground, cover nearly 100 acres. Each block constituting the seamen's quarters consists of three three-storey buildings, 360ft. in length by 45ft. in width, linked by a subsidiary block of one storey. They are built of red brick with stone dressings, the lower floor being set apart for store-rooms, and the two upper floors divided into rooms each accommodating 125 men, and arranged as on board ship, with mess tables running down each side of the room, while overhead are steel girders from which the men sling their hammocks at night. In the subsidiary blocks are wash-houses, hot-air drying closets, classrooms for instruction, and engine- and boiler houses. The warrant officers in their block have reading-rooms, billiard-tables, cabins and bathrooms. For the recreation of the men there is a theatre for dramatic entertainments and smoking concerts, capable of holding 1,500 persons; also canteens, billiard-rooms and reading-rooms.

**The Divine Spark.** REFERRING to the subject of architectural education and its influence on design, the "American Architect" observes that sentimental people will say at once that the thirteenth-century Gothic, as well as the Doric of Ictinus and the Renaissance of Palladio, had the "divine spark," while modern work has no divine sparks. "We are not so sure about the latter theory," says our contemporary, "but, at least, the divine spark does not shine very brilliantly in modern architecture, and it is a proper object of modern architectural education to try to revive it. A favourite view, which has much to commend it, is that the study of nature is essential to the production of beautiful architectural design; and we know that the great architects of antiquity, of the Renaissance and of the Middle Ages were familiar with natural forms, even when they were not also professional sculptors; but it may be questioned whether this is enough. If we are not mistaken, the German architects, who are commonly supposed to have nothing but an engineering education, with a little architectural history added, have more practice in drawing from the life during their university course than is given in any school of architecture in the United States or is required even in the School of Fine Arts in Paris; yet, clever and picturesque as modern German architecture is, very little of it can be called beautiful. Here, then, the theory seems to be defective. It is not, as some people would have us suppose, that the German character is incapable of perceiving beauty of form, for much of the modern German sculpture is unrivalled in its way; but the study of form does not seem to affect German architects in the way in which it affected those of Greece or Italy or France; and there is, apparently, need of further investigation before the subject can be cleared up. Such investigation can be better made in the United States, perhaps, than anywhere else by comparing the various curricula of the professional schools with the work which they turn out. Of course, the individual capacity of students, or accidents of other kinds, will vary the results; but as the scientific man eliminates individual eccentricities by averaging a great number of specimens, so it may be possible to conclude, with approximate certainty, that the study of mathematics in one school, or assiduous drawing from the life in another, or liberal practice in modelling in a third, is favourable or unfavourable to the feeling for proportion and composition of lines, surfaces, lights and shadows on which architecture, considered as a fine art, depends."

**Four City Churches.** A Parliamentary return showing the number of churches in the City of London destroyed since 1894 furnishes instructive reading. In all, four churches have been removed during the nine years. The largest sum received in the case of any one church was derived from St. Michael, Bassishaw, a sacred edifice which certainly claimed Christopher Wren as architect, although it was altogether unworthy of his genius. In fact, it has been described more than once as a remarkable instance of jerry-building in the Middle Ages. The gross amount realized by the sale of the site to the Corporation was £36,014, the nett proceeds being £30,946.



HALF EXTERNAL ELEVATION HALF INTERNAL ELEVATION

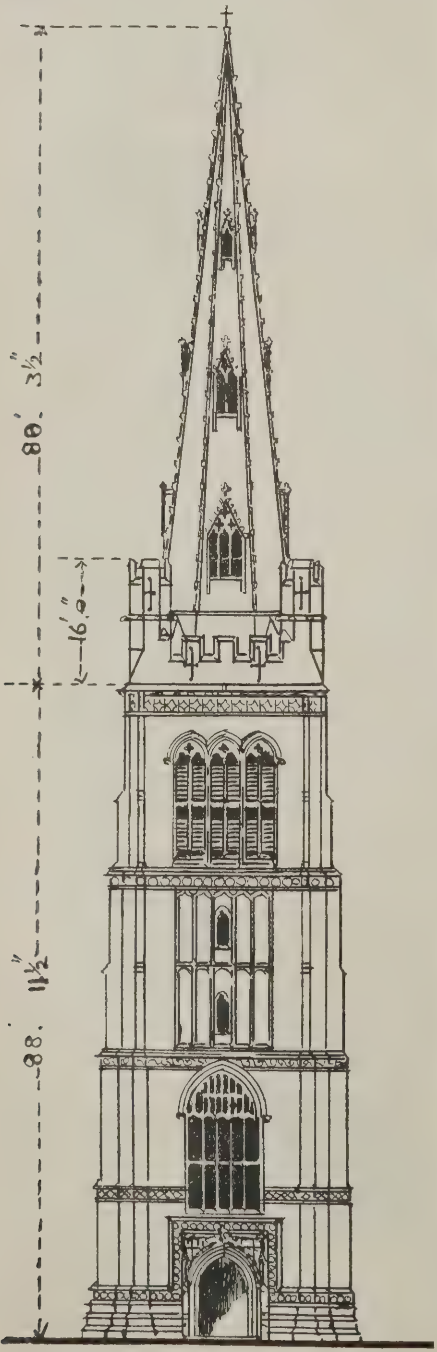
SECTION ON LINE AA

PLAN OF WINDOW

Detail of Mullion & Tracery

KETTERING CHURCH, NORTHANTS: NORTH WINDOW OF CHANCEL.
MEASURED AND DRAWN BY L. M. GOTCH.

The church of St. Michael, Edmonton, has been erected at a cost of £10,000; the total cost of removing the remains having been £2,444. The church of St. Michael, Wood Street, also a Wren edifice, realized £31,617. To meet the cost of erecting the church of St. Michael and St. Andrew, East Greenwich, and providing a parsonage house, an amount of £14,783 has been reserved. The sale of St. Bartholomew, Moor Lane (originally the church of St. Bartholomew-by-the-Exchange, and removed to Cripplegate sixty years ago), realized £20,420. A sum of £9,000 has been set apart for the church of St. Bartholomew, Stamford Hill. The fourth church referred to in the return is that of St. George, Botolph Lane, which has been closed for many years past consequent on its having been scheduled as a dangerous structure, and is now united for ecclesiastical purposes to the benefice of St. Mary-at-Hill. The site was recently offered at the Mart, but withdrawn owing to the auctioneer failing to obtain a bid equal to the reserve. The vestry-room, with its beautiful carving and historic associations, is to be retained as a place of assembly for the parishioners of the benefice.



KETTERING CHURCH: WEST ELEVATION.

## Keystones.

**For a Library at Bridgeton, Glasgow,** the designs of Mr. J. R. Rhind, architect, of Inverness, have been accepted.

**Mr. Carnegie** has offered to provide free libraries for the Sutton and Newtown districts of St. Helens.

**The new Church of St. Patrick at Donabate, Dublin,** was dedicated recently. Mr. George L. O'Connor was the architect and Messrs. Connolly & Son were the builders.

**Competition for Co-operative Stores, &c., at Great Harwood.**—First premium, Mr. F. J. Parkinson, of Blackburn; second, Mr. W. Stirrup; third, Mr. H. S. Fairhurst.

**Coats Parish Church, Coatbridge,** has been struck by lightning. Two turrets were knocked down, and these crashed through the roof and destroyed the beautiful ceiling of the church. The seating is considerably damaged.

**Trees in Paris Streets.**—There are 86,012 trees in the streets of Paris, exclusive of those in its parks, squares and gardens. Eighty-eight men have the care of the trees, and the cost of keeping them in proper condition is 3fr. a root.

**A new Board School at Halifax** has been erected in Battinson Road at a cost of £29,500. It provides accommodation for 1,000 children. Ventilation is on the plenum system. The architects were Messrs. C. F. L. Horsfall & Son.

**The Tower of St. Margaret's Parish Church, Arbroath,** is to be completed from designs by Mr. T. S. Robertson, architect, of Dundee, who designed the church, which was finished in 1879. Messrs. Ramsay & Gordon, of Arbroath, are the builders.

**New Offices for the London Missionary Society** are being erected in New Bridge Street on a corner site nearly opposite Ludgate Hill Station, at the south-east corner of Tudor Street. The building is designed in Renaissance style and will be faced externally with Portland stone.

**Tottenham Municipal Buildings.**—Messrs. Campbell & Son have been appointed to take out the quantities for the new municipal buildings at Tottenham, and the architects, Messrs. Tayler & Jemmett, have been instructed to proceed forthwith with the contract drawings.

**The Extension of the Mall into Whitehall** will not necessarily involve the removal of the statue of Charles I.; but whether it will be desirable to shift its position depends upon the exact line on which the road will ultimately be formed. It is hoped that the essential features of the Memorial will be finished in 1908.

**New Bridge at Bow.**—Work in connection with the rebuilding of Bow Bridge has at last been commenced. The enterprise is being carried out as a joint improvement by the London and the Essex County Councils, and, in view of the forthcoming electrification of the East London tramways, will be pushed on with all speed. The new bridge will be about 8ft. wider than the existing one, will have easier gradients, and will cost nearly £10,000.

**The Louisiana International Exhibition, 1904.**—The late Mr. Whistler had been appointed chairman of the Art Selection Committee for the United Kingdom; the other members are Mr. Edwin A. Abbey, Mr. J. McLure Hamilton and Mr. John S. Sargent, with Mr. Joseph Pennell as hon. secretary. American artists residing in a foreign country will be admitted as exhibitors in the United States section only. Further information will be supplied upon application to the hon. secretary at 14, Buckingham Street, Strand, W.C.

**Messrs. Mabie, Todd & Bard,** 93, Cheapside, E.C., have issued a new illustrated catalogue of their well-known "Swan" fountain pens and "Cygnet" stylos. The catalogue can be obtained post free on application.

**The Re-modelling of the Savoy Theatre** has been in progress for some time, but is not expected to be completed before November. In future all parts of the house may be approached from the main entrance in the Strand, though it is understood that none of the existing exits and entrances will be interfered with. There will be a covered courtyard connected with the hotel.

**The Housing Question.**—A contemporary draws attention to the fact that not human beings only are overcrowded. In the garden of a social reformer two nests were recently discovered, one full of robins and the other full of thrushes; both scandalously overcrowded, absolutely devoid of sanitary arrangements and without any provision for the separation of the sexes.—The Liverpool Corporation Housing Committee has instructed the city surveyor to make arrangements for the reception of a deputation from Berlin on October 2nd and 3rd to inspect the artizans' dwellings erected by the Corporation.—The great ground landlords of Marylebone are voluntarily doing their part towards solving the local industrial housing problem. Lord Howard de Walden is erecting in St. John's Wood blocks of working-class dwellings to accommodate persons dishoused in Portland Town, and Viscount Portman has just completed a series of artizans' buildings in Queen Street, Marylebone.

## Obituary.

**Mr. Alfred Whiffen,** a builder, of Saffron Walden, committed suicide last Friday by hanging himself.

**Mr. Harry Wallis,** of the firm of Mr. Walter Wallis, builder, of Balham and Littlehampton, died recently.

**M. Frédéric Eugène Piat,** the well-known decorative sculptor, died in Paris last week at the age of sixty-six. He founded at Troyes, in 1894, the first provincial museum of decorative art in France.

**Mr. W. Wood,** architect, of Crawley, was accidentally killed last week. He was cycling home from Reigate at night and ran his machine against a letter-box fixed on the side of the pavement. He was thrown to the ground and broke his neck.

**Mr. James Bowden,** ex-mayor of Burslem, died last Sunday week at Endon at the age of sixty-five years. Deceased was a native of Burslem and served his apprenticeship with the late Mr. John Watkin, joiner and builder; he afterwards established a successful business as a builder on his own account, from which he retired about ten years ago.

**Mr. William Wilkinson,** builder, of Southport, died last Sunday week at the age of seventy-five years. Deceased was the son of the late Mr. Daniel Wilkinson, farmer, of Tealby, Lincolnshire. He was apprenticed to the building trade, becoming subsequently foreman for Mr Jonathan Statham, building contractor, Manchester, by whom he was engaged for the erection of the Mornington Road Wesleyan Church, Southport. Soon after the completion of this structure Mr. Wilkinson started business in Southport on his own account, his first workshop being at the corner of Talbot Street and Eastbank Street. He afterwards removed his works to Shakespeare Street. Mr. Wilkinson went to Southport about forty years ago. He was for many years president of the Southport Master-Builders' Association.

# Enquiries Answered.

*The services of a large staff of experts are at the disposal of readers who require information on architectural, constructional or legal matters. Questions should in all cases be addressed to the Editor. The querist's name and address must always be given, not necessarily for publication.*

### Practical Joinery.

London, S.E.—J. P. writes: "Which is the best book on practical joinery?"

"Modern Practical Joinery," by George Ellis (B. T. Batsford, 94, High Holborn, W.C., price 12s. 6d. nett).

### Claim for Loss of Profit on Stoppage of Works.

Halifax.—H. T. writes: "A contract for work amounting to £500 is let and duly signed. The contractor does £50 worth of work, and then, owing to a dispute between the proprietor and the local authority, work is stopped. What amount is the contractor entitled to claim?"

Everything depends upon the wording of the specification. When there is no clause to the contrary, the builder is entitled to claim 10 to 15 per cent. loss of profit on the work discarded, besides full payment for the work done. HENRY ADAMS.

### Cleaning Stonework.

Newbury.—H. F. E. writes: "Through careless workmanship some stonework has been smeared over with cement in the laying of same. It is Irish grey stone, and is smeared about the joints to a width of 2in. How can it be cleaned?"

I fear but little can now be done to remedy this unsightliness, though you may try the effect of a little "spirits of salts" as a solvent, taking care to wash it off before it stains the stonework. Possibly rubbing with pumice-stone (or other soft stone) and water may be found of benefit. G. S. M.

### Architects Sued by Assistants.

Darwen.—Vira writes: "Could an architect be sued under the Employers' Liability and other similar Acts by any of his assistants for damages sustained whilst following out duties in their ordinary work?"

I have never heard of such a case, though, no doubt, under the common law the assistant would have a claim against the architect for injury caused by the latter's act or negligence. The Workmen's Compensation Act, 1897, to which no doubt you refer, applies (*inter alia*) to "workmen" engaged in the construction of any building more than 30ft. in height, but there is nothing in that Act which would apply to any person not in the "undertaker's" employ.

G. S. M.

### Quantity Surveyor's Fees.

Chatham.—T. G. L. writes: "What fees are demanded by a quantity surveyor if he takes out quantities for an architect; and what remuneration is he entitled to if he takes them out for the builder without the architect's knowledge? What is the address of the Surveyors' Institution, and where can particulars of its examinations be obtained?"

The fees vary according to the nature of the work, and should be agreed upon before the work is undertaken. They range from a minimum of 1½ per cent. to 2½ per cent., exclusive of lithography and copying. The same fees should be charged to architect or builder. If a surveyor takes out quantities for a builder without the architect's knowledge he is entitled to his remuneration from the builder alone. The address of the Surveyors' Institution is Great George Street, S.W. Particulars of the examinations may be obtained from the secretary.

### Cellar Roof.

Nottingham. — M. W. writes: "I am making a cellar with a flat concrete roof 14ft. wide and 1ft. 6in. above ground level. Please state the smallest size of steel joists to use, the width apart, and thickness of concrete. I also wish to make a small doorway to same 3ft. 6in. high. Kindly give sketch of construction and finish. Which is the simplest way to keep ground water out of the cellar?"

The thickness of concrete and size of joists must largely depend upon the weight you wish to place upon the cellar roof. If, however, you do not propose to use it for any such purpose, one wrought-iron joist about 7in. by 4in. laid across the centre will be ample. The concrete should be of Portland cement with aggregate broken to rather smaller dimensions than usual, and with ample sand "filling." Skewbacks should be formed at the top of the side walls, and the thrust of the roof kept as low as possible. Iron tie-rods may be placed as shown in the accompanying sketch if thought desirable, but they are not necessary if the side walls have a good earth backing. The centre joist may be entirely embedded in the lower portion of the concrete, as shown in Fig. 1, or its lower flange may be flush with the soffit of roof. I would suggest corrugated iron sheets as being the simplest centering for this purpose; they may be carried on bearers at both ends and centre, supported by timber bracing or trestles, &c. Care should be taken to evenly distribute the weight of the concrete when laying, in order that no dislocation may take place. Allow plenty of time for the work to set before striking the centering. If required to be watertight, it will be necessary to form the roof in such a way that the rainwater may run off quickly, and channels may be formed round the concrete for this purpose (see sketch), proper provision being made for discharge. A better plan is to treat the whole outer surface with asphalt (about ¼in. thick, applied hot). I see no difficulty in making the doorway you wish in the side or end wall by means of exterior brick steps carried down to a sufficient depth to give the headroom required. The side walls and steps of such an entrance should be of 9in. brickwork, and an ordinary door at the foot completes the arrangement. If, however, your question refers to a small door for the admission of coal or barrels, a brick slope of about 45 degs. may be formed outside the cellar wall and the whole covered by a horizontal or sloping door or shutter, as shown in Fig. 2, opening outwards and secured by a bolt or chain inside. The simplest way of keeping ground water out of the cellar is to lay a drain near the footings of the walls all round the outside, carrying it to a free outfall if possible. If no better plan can be devised, it may be made to discharge into a "diphole" in the cellar, and baling must then be resorted to when necessary. G. S. M.

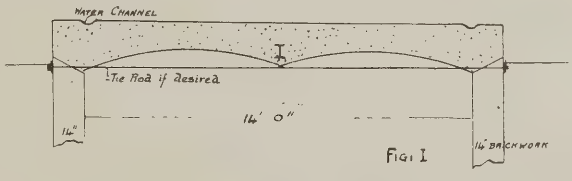


Fig. I

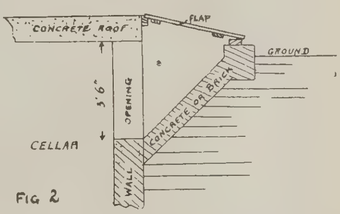


Fig 2

### Floor Material for Operating Theatre.

Aylesbury.—Hospital writes: "I should be glad to know of a suitable material for covering the floor of an operating theatre: the present floor is of yellow deal battens laid on wooden joists."

The floor might be of terrazzo or hard cement; asphalt is eminently impervious, but is too dark in colour—and abundance of light is necessary for an operating theatre. Hardwood floors are not to be recommended for such a purpose. See the article in this issue on the new Belgrave Hospital for Children.

### A Broken Contract.

Merthyr Tydvil.—Contractor writes: "About a year ago I entered into a contract with a steel company for certain work which included the lining of a new blast furnace, the company providing material and plant. The furnace is now being built, but a short time ago the general manager of the company informed me that he would not want me to do the lining, having made other arrangements. I, of course, do not assent to this. (1) If the company employ someone else to do the work, what steps should I take? (2) If they get the work done by another contractor, or do it themselves, how much of the contract money am I entitled to? (3) When can I claim what is due to me under the contract?"

The essential points of a legally binding contract are (*a*) an unconditional offer and (*b*) an unconditional acceptance. Your case, on the face of it, appears to comply with these conditions, and the company is therefore proposing to make default. You would be well advised in laying all the documents in the case before your solicitor at once. Replying to your questions as they stand:—(1) Having made it clear that you are willing to carry out the contract, I do not think you need do anything more. Personally, in such a case, I should not apply for an injunction unless my solicitor advised it. (2) You would, in my opinion, be entitled to recover the amount of damage you suffer, *i.e.*, the amount of profit the contract would have brought you. In addition it is possible you may be injured by reason of workmen standing idle, &c., but this would be a claim requiring very strong evidence to substantiate, if the case be taken to court. (3) A claim of a total sum made as soon as the work is completed (or during its execution if you prefer) would seem most appropriate. It is not necessary for you to keep men upon the ground; it is possible they may be treated as trespassers. G. S. M.

### Sketching Buildings in Belgium.

Norwich.—A Student writes: "I should be glad of information as to obtaining permission to visit and sketch the interiors and exteriors of public buildings in Belgium."

Very little difficulty is experienced in Belgium if a reply foreign postcard (obtainable at any post-office) be sent in advance, asking, in French, for permission to sketch, naming the dates. For ecclesiastical buildings these should be addressed to "Mons. le Curé de l'église de . . ." and for municipal buildings to "Mons. le Bourgmestre de . . ." There is most difficulty in the great show buildings, like Antwerp Cathedral and St. Gudull at Brussels, which I should avoid, preferring Malines Cathedral, Louvain Cathedral (for Renaissance reredos, patterns of lead glazing, flamboyant tracery, and small ironwork on aumbry doors in chapels), St. Gertrude, Louvain (for choir stalls), and Liège Cathedral (for thirteenth-century ironwork on the door from the cloisters to the Treasury). Malines, Louvain, Tourmac, Audenarde and Ypres should on no account be missed. They are quite as good as Bruges and Ghent, and less hackneyed. M.

### Water Supply from Roof.

NORTHAMPTON.—H. N. writes: "(1) Can a rural district council refuse to pass a water supply that is obtained from the roof of a building and filtered? The medical officer says that such a supply would not be considered sufficient for *any* house in their district. There are no by-laws except the Public Health Water Act, 1878. (2) Can the contents of the filter be reckoned as part of the supply? (3) Where the filter is below a yard, how is the overflow generally arranged?—the inlets to filter are 1ft. 8in. below yard level. Is an overflow absolutely necessary, and must it come below inlets? (4) In a half-timbered house, would staining the deal and pitch-pine and then covering with stop-rot or carbolineum avenarius be satisfactory, or should umber be mixed with stop-rot? I want the woodwork to be dark, and my client objects to paint or tar. How many coats are necessary?"

(1) A rural district council are empowered to refuse a water certificate if in their opinion the supply is inadequate –120 days' supply in rainy districts or 200 days in dry districts is usually considered sufficient. Each person requires from 16 gals. to 20 gals. per day, though in many cases these quantities are greatly exceeded—especially where baths and w.c's., &c., are used. The capacity of the circular tank shown in your sketch, 3ft. 6in. in diameter, is 60 gals. per ft. of depth. You will find it more economical to increase the capacity of your storage tank by increasing its diameter rather than by deepening it. (2) Though as a matter of fact the filter holds a portion of the available supply, I do not think you are strengthening your case with the council by laying any stress on so small a point. (3) Judging from the plan given, I should think that the overflow can be made to run in a small surface channel to the yard gulley which receives the sink waste; it is, of course, desirable that this should be so arranged that the water which runs to waste should not pass through the filter. It is not necessary that the overflow should be below the inlet if you make the joints of the inlet drain watertight to a height of at least 1ft. 8in. (4) You may use any *transparent* oil colours for staining the woodwork, and will find some exhaustive information about stains in "Specification No. 6 (1903)," p. 601. I have employed Stockholm tar (not gas tar) and umber with success for a similar purpose to that described.

G. S. M.

### Brand on Rolled Joists.

BIRMINGHAM.—J. D. & S. write: "'Hoerde 30' is a brand on some steel joists. Would they be of foreign or English manufacture?"

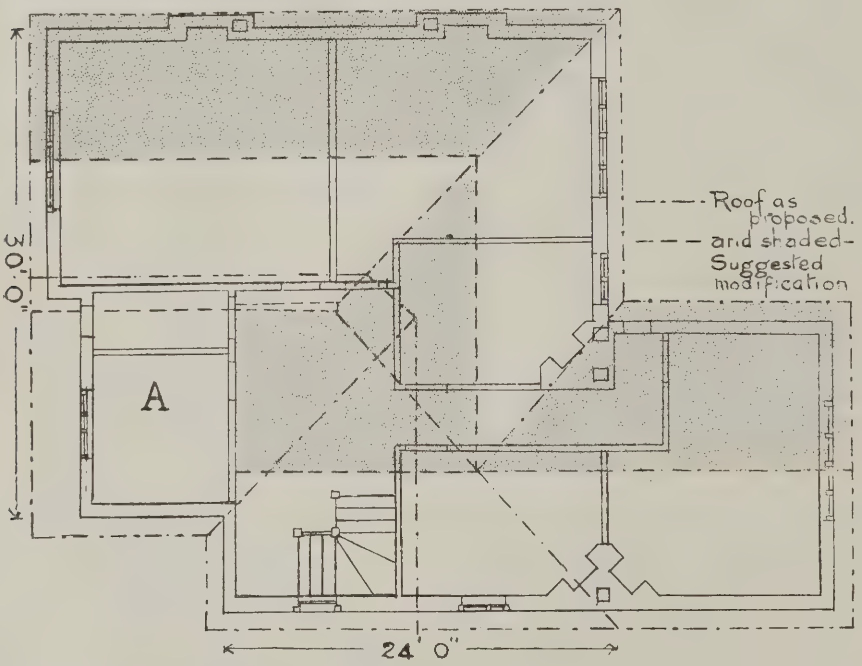
The brand is evidently foreign, probably German or Belgian, but I do not know it, as I do not use foreign joists.

HENRY ADAMS.

### Roofing a House.

LONDON, S.W.—OAK writes: "I send herewith first-floor plan of proposed country house (not reproduced). Ground floor to wall-plate 19ft.: half-timber and rough-cast. Which is the best method of roofing the house with tiles? My own plan necessitates such large spans, 30ft. and 24ft., which I wish to avoid."

The accompanying illustration shows how the large spans may be avoided and simpler roof lines obtained. The portion marked A can be roofed separately with a flat, dome, conical, pent or other shaped roof. Always endeavour to have simple roofs—(1) for reasons of economy and (2) because they give a sense of repose and logical fitness. It is apparent that in this design for a house the roof plan was not an ever-present factor in the process of planning the rooms. This is one of the common faults of English architects to-day. Problems never seem to be considered as a whole, and the plans of houses especially seem shaken together in a heterogeneous manner.



### Objection to Slaughter-House.

AMBLESIDE.—ENQUIRER writes: "A wishes to build a slaughter-house and stabling on the site shown in the accompanying plan (not reproduced). He applies to the local authority for a licence. The adjoining owners petition against it on the ground that it would be detrimental to their property. After four months the authority decline to grant a licence. Have they any right to do so, seeing that the plans are satisfactory and everything is in accordance with the by-laws?"

At first sight four months' delay appears rather unnecessary, but it may have been occasioned by a genuine desire on the part of the sanitary authority to do justice to your case. I am of opinion that the urban district council are justified in refusing to grant the licence referred to, if in their opinion the slaughter-house is unnecessary or undesirable for sanitary reasons—the fact that the proposed building is in accordance with the by-laws having but little effect on their decision. Sanitary authorities are empowered by sections 112, 113, 114 and 170 of the Public Health Act, 1875, to control and make by-laws, &c., in respect of slaughter-houses and buildings of similar character, and clause 125 of the Towns Improvement Act, 1847 (which is incorporated with the Public Health Acts) runs: "The Commissioners (or in this case the urban district council) may licence such slaughter-houses . . . as they from time to time think proper." Judging from the plan, you can make strong representations to the authority that your proposed building can be of little (if any) nuisance from a sanitary point of view, and the petition appears to be from a rather prejudiced source, but I fear there is no appeal from the council's decision.

G. S. M.

### Civil Engineering.

SHANGHAI.—CIVIL ENGINEER writes: "Kindly name someone who coaches young students of civil engineering."

Prof. Henry Adams, of 60, Queen Victoria Street, London, E.C., would probably be able to assist you.

### Red Ants in Country House.

THORNFORD.—CONSTANT SUBSCRIBER writes: "A country house is much infested with red ants Is there any means of destroying and excluding these pests?"

See a reply to an enquiry on p. 183 of our issue for October 25th, 1899.

### Strength of African Oak Joists.

G. A. J. writes: "A room is to be constructed with four 12in. by 10in. beams of African oak. These beams carry 5in. by 4in. joists, also of African oak, spaced about 1ft. apart. African oak is considerably heavier than English oak. What is its weight and what are its carrying powers? Also, are the beams properly safe to carry joists, floor and a partition over, or should they be larger?"

The specific gravity of African oak is 0·988, the weight of a cubic foot 62lbs., and transverse strength of unit beam 2,523lbs. The safe load, uniformly distributed, on a beam of African oak is $W = \frac{8KBD^2}{FL}$, where W = breaking weight in cwts, K = coefficient of rupture in cwts. $= \frac{2523}{112} = 22{\cdot}5$, B = breadth in inches, D = depth in inches, F = factor of safety (say 7 for permanent indoor work) and L = clear span in inches. A 12 × 10 beam over a span of 22ft. 6in. would thus carry a distributed load of $W = \frac{8KBD^2}{FL} = \frac{8 \times 22{\cdot}5 \times 10 \times 12^2}{7 \times 22{\cdot}5 \times 12} = 137{\cdot}1$ cwts. The weight of one beam will be $\frac{12 \times 10}{144} \times 62 \times 22{\cdot}5 = 1162{\cdot}5$lbs. = 10·4 cwts.; 137·1 – 10·4 = 126·7 cwts. available strength. The area supported by one beam is $22{\cdot}5 \times 7{\cdot}5 = 168{\cdot}75$ sq. ft., $\frac{126{\cdot}7}{168{\cdot}75} = 0{\cdot}8$ cwts. per ft. super., and therefore not strong enough even for a dwelling-house The common joists are 5 × 4 with a span of 7·5ft. $W = \frac{8KBD^2}{FL} = \frac{8 \times 22{\cdot}5 \times 4 \times 5^2}{7 \times 7{\cdot}5 \times 12} = 28{\cdot}6$ cwts. The weight of one joist is $\frac{5 \times 4}{144} \times 62 \times 7{\cdot}5 = 65$lbs. = 0·58 cwt.; 28·6 – ·58 = 28 cwts available strength. Area supported by one joist = $7{\cdot}5 \times 1{\cdot}4 = 10{\cdot}5$ sq. ft., $\frac{28}{10{\cdot}5} = 2{\cdot}7$ cwts. per ft. super., which is satisfactory. The 12 × 10 beams should therefore be replaced by 12 × 6 × 32lb. rolled steel joists.

HENRY ADAMS.

# Tenders.

*Information from accredited sources should be sent to "The Editor" at latest by noon on Monday if intended for publication in the following Wednesday's issue. Results of Tenders cannot be accepted unless they contain the name of the Architect or Surveyor for the work.*

*Addressed postcards on which lists of tenders may be stated will be sent post free on application to the Manager,* BUILDERS' JOURNAL, 9, *East Harding Street, E.C.*

**Aberavon.**—For the erection of a villa on the Baglan Road, for Mr. H. A. Burgess. Mr. Frank B. Smith, architect, Port Talbot:—

| | |
|---|---|
| J. Nicholas | £1,210 |
| J. Davies | 1,100 |
| Stephen Rees | 1,100 |
| C. & F. Green | 970 |
| M. Cox* | 787 |

* Accepted. [All of Port Talbot.]

**Aberystwyth.**—For the supply and erection of a timber breakwater with stone filling at the harbour entrance, for the Corporation. Mr. A. T. Walmisley, engineer, 9, Victoria Street, Westminster:—

| | | | |
|---|---|---|---|
| W. Gradwell & Co., Barrow-in-Furness | £15,362 | 5 | 7 |
| Owen Brothers, Aberystwyth | 13,932 | 3 | 0 |
| London and Tilbury Lighterage and Dredging Co., London | 13,211 | 10 | 0 |
| Pethick Brothers, Westminster | 11,813 | 3 | 6 |
| R. C. Brebner & Co., Edinburgh | 11,712 | 2 | 10 |
| A. Fasey & Sons, Leytonstone | 11,053 | 15 | 0 |
| J. Phœnix & Sons, Wrexham | 10,896 | 19 | 0 |
| E. R. Lester,* Plymouth | 10,500 | 0 | 0 |

* Accepted.

**Blaengwynfi (Wales).**—For private street improvement works in Jersey Road, Blaengwynfi, for the Glyncorrwg Urban District Council. Mr. W. P. Jones, surveyor, Cymmer, Port Talbot:—

| | | | |
|---|---|---|---|
| Barnes, Chaplin & Co.,* Cardiff | £1,075 | 15 | 9 |
| M. Thompson, Briton Ferry | 1,036 | 0 | 0 |

* Accepted. [Surveyor's estimate, £1,075 5s. 10d.]

**Cromer.**—For constructing a concrete and brick reservoir to contain 1,000,000 gals. at the Valleys Plantation, situated about 2⅓ miles to the westward of the town of Cromer, in Norfolk, for the Cromer Urban District Council. Mr. J. C. Melliss, M.I.C.E., engineer, 264, Gresham House, Old Broad Street, London, E.C.:—

| | | | |
|---|---|---|---|
| J. F. Price, Nottingham | £8,665 | 2 | 4 |
| Bentley & Loch, Leicester | 7,903 | 10 | 10 |
| Carter & Wright, Great Yarmouth | 6,613 | 18 | 7 |
| G. Munday & Sons, London | 6,252 | 0 | 0 |
| H. Arnold & Son, Doncaster | 6,176 | 0 | 0 |
| A. Braithwaite & Co., Leeds | 5,968 | 14 | 10 |
| B. Cooke & Co., Westminster | 5,925 | 0 | 0 |
| H. Bullen, Cromer | 5,900 | 0 | 0 |
| J. Young & Son, Norwich | 5,813 | 13 | 8 |
| J. & M. Patrick, London | 5,709 | 0 | 0 |
| J. C. Trueman, Swanley | 5,495 | 0 | 0 |
| T. Morran & Son, Dovercourt | 5,463 | 0 | 0 |
| Girling & Smith,* Cromer | 5,394 | 0 | 0 |

* Accepted.

**Cardiff.**—For the rebuilding of 31, St. Mary Street, Cardiff, for Mr. T. J. Masters. Mr. E. Seward, F.R.I.B.A., architect, Cardiff:—

| | | | |
|---|---|---|---|
| D. W. Davies | £4,675 | E. Turner & Sons | £4,056 |
| W. Williams | 4,280 | Beames & Nephew | 4,048 |
| Knox & Wells | 4,250 | W. Thomas & Co. | 3,997 |
| W. Symonds & Co | 4,152 | E. R. Evans & Bros.,* Gwenneth, Cathays | 3,800 |
| Lattey & Co. | 4,128 | | |
| F. Small | 4,080 | | |

* Accepted.

**Dalton-in-Furness.**—For the whole of the works required in completing the new Carnegie free library, for the Dalton-in-Furness Urban District Council. Mr. W. Richardson, surveyor:—

| | | |
|---|---|---|
| T. F. Tyson & Sons, Ulverston | £3,486 | 18 |
| Clark & Robinson, Barrow-in-Furness | 3,150 | 0 |
| Ashburner, Ltd.,* Dalton-in-Furness | 2,903 | 0 |
| J. Thoms & Sons, Lancaster | 2,752 | 18 |

* Accepted.

**Drighlington (Yorks).**—For (contract No. 1) works required in the construction of about 2,735 lineal yards or thereabouts of earthenware and cast-iron pipe sewers, varying from 9in. to 18in. diameter, with the necessary valves, manholes, lampholes flushing chambers, &c., also for the several works to be constructed on the outfall field, comprising tanks, filters, irrigation areas, distributing carriers and manholes, subsoil drains and manholes, culvert and road to works, with all necessary valves, &c., at Drighlington. Mr. J. Waugh, C.E., engineer, Bradford:—

| | |
|---|---|
| S. Drake, Liversedge | £9,730 |
| Graham & Co., Huddersfield | 9,508 |
| J. Akeroyd & Sons, Birstall | 9,477 |
| A. Greaves, Calverley | 9,143 |
| Dixon & Co., Bradford | 8,986 |
| J. Kellett, Bradford | 8,637 |
| W. Brigg, Frizinghall | 8,600 |
| A. Drake, Cleckheaton | 8,264 |
| Ives & Co., Gomersal | 7,690 |
| Ward & Tetley,* Bradford | 7,489 |
| A. & C. Harris, Morley | 7,231 |

* Accepted.

**Faversham.**—For the erection of a police station, cottages, &c., for the Standing Joint Committee. Mr. F. W. Ruck, county surveyor, 86, Week Street, Maidstone:—

| | |
|---|---|
| A. Dyke, Westgate-on-Sea | £5,896 |
| Ratcliff Brothers, Faversham | 5,760 |
| Amos & Foad, Whitstable | 5,531 |
| W. W. Maplin, Ramsgate | 5,391 |
| Goodwin & Jeffery, Maidstone | 5,300 |
| Gann & Co., Whitstable | 5,235 |
| H. J. Smith & Son, Maidstone | 5,153 |
| W. Judges, Boughton | 5,145 |
| Denne & Son, Deal | 4,973 |
| Davis & Leaney, Goudhurst | 4,953 |
| Barden & Head, Maidstone | 4,910 |
| R. Avard, Maidstone | 4,845 |
| R. M. & H. Whiting, Ospringe | 4,813 |
| Fuller & Sons, Faversham | 4,675 |

* Accepted.

**Llanrug (Wales)**—For the erection of dwelling-houses, &c., at Pant-y-Bryngwyn, Llanrug, for Mr. W. G. Roberts, Hendregaerog, Carnarvon. Mr. Rowland Lloyd Jones, architect, 14, Market Street, Carnarvon:—

| | |
|---|---|
| [Seven houses.] | |
| W. & R. Jones, Pwllheli | £1,950 |
| Jones Brothers, Bontnewydd | 1,610 |
| W. D. Williams, Carnarvon | 1,500 |
| W. Roberts & R. E. Jones, Portdinorwic | 1,399 |
| H. Jones, Llanberis | 1,281 |
| W. J. Griffiths, Carmel | 1,250 |
| [Three houses.] | |
| W. & O. Pritchard, Llanfair P.G. | 670 |
| Roberts & Williams, Bethesda | 618 |
| [Repairs to four old houses.] | |
| Jones Brothers | 834 |
| W. Roberts & R. E. Jones | 784 |
| W. & O. Pritchard | 760 |
| Roberts & Williams | 740 |
| W. J. Griffiths* | 660 |

* Accepted.

**Langley Moor (Durham).**—For the erection of club buildings, for the Langley Moor Social Club and Institute. Mr. F. Smith, architect, Brancepeth:—

| | | |
|---|---|---|
| W. Rhodes, Durham | £2,632 | 10 |
| G. T. Manners,* Durham | 2,395 | 0 |

* Accepted. [Architect's estimate, £2,450.]

**Norwich.**—For the erection of a nurses' home, for the Norwich Board of Guardians. Messrs. Morgan & Buckingham, architects, 3, Redwell Street, Norwich:—

| | | |
|---|---|---|
| F. R. Hipperson | £2,810 | 7 |
| J. S. Smith | 2,475 | 0 |
| R. L. Leveridge | 2,434 | 0 |
| Anderson & Son | 2,365 | 0 |
| Chapman & Son | 2,227 | 0 |
| J. Evans | 2,300 | 0 |
| Scales Brothers | 2,288 | 0 |
| Boddy & Son | 2,287 | 10 |
| J. J. Howes | 2,245 | 0 |
| S. W. Utting | 2,227 | 0 |
| J. Burton & Son | 2,115 | 0 |
| W. J. Hannant* | 2,075 | 0 |

* Accepted. [Architect's estimate, £2,200.]
[All of Norwich.]

**Old Lenton (Nottingham).**—For the erection of new ropery works in Spring Close, Old Lenton, for Messrs. W. Coates & Sons. Mr. Fred C. Martin, architect, Angel Row, Nottingham:—

| | | | |
|---|---|---|---|
| Dennett & Ingle | £4,150 | T. H. Harper | £3,900 |
| Maule & Co. | 4,030 | J. H. Vickers, Ltd. | 3,885 |
| F. Messom | 4,000 | Williamson & Co.,* Nottingham | 3,870 |
| J. Wright | 3,968 | | |

* Accepted.

**Paignton.**—For the erection of proposed cottage flats, Merritt Road, Paignton, for Mr. W. M. G. Singer, C.C. Mr. W. G. Couldrey, architect, Paignton. Quantities by Mr. Vincent Cattermole Brown, Paignton:—

| | | |
|---|---|---|
| E. Westlake | £5,116 | 0 |
| G. Webber | 5,096 | 10 |
| R. Harris & Sons | 5,035 | 0 |
| C. & R. E. Drew | 4,992 | 15 |
| H. Webber & Sons* | 4,916 | 0 |

[All of Paignton.]
* Accepted subject to modifications.

**Penarth.**—For the erection of a new boys' school and for additions to and alterations of the existing schools in Pill Street, Cogan, for the Penarth (U.D.) School Board. Mr. G. A. Birkenhead, M.S.A., architect, Caledonian Chambers, Cardiff:—

| | | |
|---|---|---|
| W. Thomas & Co., Cardiff | £8,948 | 0 |
| E. R. Evans & Brothers, Cardiff | 8,495 | 0 |
| D. W. Davies, Cardiff | 8,000 | 0 |
| E. Turner & Sons, Cardiff | 7,888 | 0 |
| Blacker Brothers, Canton, Cardiff | 7,845 | 7 |
| J. S. Shepton, Penarth | 7,700 | 0 |
| J. Jones,* Penarth | 7,200 | 0 |

* Accepted. [Architect's estimate, £7,490.]

**Reigate.**—For additions to electric-lighting station, Wray Common Road, for the Town Council. Mr. F. T Clayton, C.E., engineer, Municipal Buildings, Reigate. Quantities by engineer:—

| | | | |
|---|---|---|---|
| Elsey & Sons, Reigate | £2,226 | 14 | 10 |
| S. Jeal, Reigate | 2,220 | 0 | 0 |
| Nightingale & Sons,* Reigate | 2,023 | 0 | 0 |

* Accepted.

**Sunderland.**—For the building of St. Mary's new vicarage, Tyne Dock, for the Rev. L. P. Williams. Messrs. Joseph Potts & Son, architects, 57, John Street, Sunderland:—

| | | |
|---|---|---|
| R. Storey, West Boldon, co. Durham | £2,100 | 10 |
| J. Young, Tyne Dock | 2,100 | 0 |
| Robertson, South Shields | 2,000 | 0 |
| W. B. Cooper, Sunderland | 1,937 | 10 |
| J. B. Stott, Sunderland | 1,980 | 0 |
| W. Hall, Gateshead | 1,960 | 0 |
| J. Armitage, Sunderland | 1,950 | 0 |
| W. D. Allison, Sunderland | 1,909 | 0 |
| S. Sheriff, South Shields | 1,869 | 11 |

**Wednesbury.**—For sewering, lighting and making-up the following street within the borough:—(1) Wharfedale Street, from Springhead to Corporation Street; (2) Oakeswell Street, from Oakeswell End to Corporation Street; (3) Corporation Street, from Ridding Lane to Hyde Road, for the Town Council. Mr. E. Martin Scott, borough engineer and surveyor:—

| | | | |
|---|---|---|---|
| J. White, junior, Handsworth | £3,602 | 19 | 7 |
| G. Law, Kidderminster | 3,203 | 14 | 8 |
| W. B. Clark, Dudley | 3,158 | 16 | 1 |
| Fitzmaurice & Co., Ltd., Birmingham | 2,603 | 19 | 1 |
| F. J. Smith, Wednesbury | 2,593 | 3 | 0 |
| G. Trentham, Handsworth | 2,133 | 19 | 4 |
| Thompson & Co., Tipton | 2,130 | 9 | 4 |
| Currall, Lewis & Martin, Birmingham | 2,010 | 5 | 11 |
| J. Owens,* Wolverhampton | 1,689 | 10 | 0 |

* Accepted.

**Watford.**—For the making-up of Park Road and Station Road, Radlett, in the parish of Aldenham, under the Private Street Works Act of 1892 (works include kerbing, channelling, storm-water drains, gulleys, &c.), for the Watford Rural District Council. Mr. E. Lailey, engineer and surveyor:—

| | | | |
|---|---|---|---|
| Free & Sons, Maidenhead, Berks | £1,760 | 0 | 0 |
| H. Williams, Harpenden, Herts | 1,746 | 8 | 8 |
| Goodchild & Jeffery, Radlett | 1,738 | 5 | 0 |
| H. Brown, Watford | 1,490 | 0 | 0 |
| Bracey & Clark,* Leavesden Road, Watford | 1,451 | 0 | 0 |

* Accepted.

# Trade and Craft.

### Water Motors.

Those builders or architects who have occasion to use a water-wheel for driving purposes of one kind or another will doubtless be interested in the "Hector" water motor which is made by Mr. Percy Pitman, hydraulic engineer, of Bosbury, Ledbury, Herefordshire. It is an improved Pelton wheel, fitted in a cast-iron case of neat design and with a removable flanged cover. All wearing surfaces are large, gunmetal or phosphor-bronze is used throughout for the buckets and other working parts, and there are three nozzles which can be instantly changed to give a varying speed. When used for organ blowing a special silent gear is fitted which is quite automatic. The "Hector" motor has been supplied to H.M. Government, Egyptian State Government, Lord Masham, Sir Richard Wyatt, several of the great railway companies and many large firms. Its cost is as follows:—$\frac{1}{50}$ h.p., £2 10s.; $\frac{1}{20}$, £3 10s.; $\frac{1}{12}$, £5; $\frac{1}{7}$, £8 10s.; $\frac{1}{4}$, £15; $\frac{2}{3}$, £20.

### A Duplex Hot-Water System.

Mr. Edward P. Milne, engineer, of 15, Craven Street, W.C., has designed a special apparatus to give a most efficient supply of very hot water for domestic purposes. It is a duplex system in which one fire heats the two waters, which do not mix. The domestic water is heated in a submerged cylinder by the water in the boiler, which never changes, and therefore makes no deposit. The domestic water, being heated by water, never boils, and the very minimum of deposit takes place, even in districts where water is badly charged with lime. The boiler is fitted with a patent smoke-consuming and fuel-economizing fire. The products of the burning fuel are passed through the fire, so that complete combustion takes place, an intense heat is generated, and a very great saving in fuel is effected. The fire-box is fitted with a large feed-hopper, by which the fire can be kept burning for several hours without attention. From tests made with ordinary firing 315 gals. of hot water were drawn off within thirty minutes at an average temperature of 140 degs. Fahr., this amount of water being equivalent to sixteen hot baths.

### A Patent Sewer Junction.

Mr. William Burrough Hill, F.S.I., surveyor, of Southampton, is the patentee of a high to low level special sewer junction, the main object of which is to provide sewer junctions of the above-named type in which the flow of sewage through the junction, from the high to the low level, will be freer than in such junctions now ordinarily made. Instead of forming—as is usually done—the lower part of the junction with a curve or bend projecting *into* the bore of the junction, the curve takes a downward direction, or the line of the lower part of the junction may be straight in a direction from collar to collar of the high- and low-level pipes respectively. Thus the discharge from the high-level pipe to the low-level pipe is freer, by reason of the consequent increased capacity of the junction; the sewage is more directly conducted to the low-level pipe and is not so likely to be ejected into that portion of the high-level sewer—provided for cleansing purposes only—which is opposite and in a continuous line with the main sewer.

*Address the M. J. and S. H. Adams' Firms as under:—*

**For SPECIALITIES IN SANITATION, &c., &c.**

Hydraulic Engineers,

**ADAMS' PATENT Sewage Lift Co., Limited,**

**YORK,**

Sewage Disposal and Sewage-Lifting,
Sewer-Flushing Syphons, Penstocks,
Valves and Castings, &c.

Sanitary Engineers,

**ADAMSEZ, Ltd.,**

(Late Adams & Co., of Leeds)

**SCOTSWOOD-ON-TYNE,**

Underground Conveniences,
School, Hospital, & General
Sanitary Appliances.

Fireclay Works and Collieries,

**GIBSON & Co., Ltd.,**

**SCOTSWOOD-ON-TYNE,**

Fire Bricks, Baths,
Glazed Slabs,
Fire Places, &c.

The Combined LONDON ADDRESS: **7, OLD QUEEN STREET, S.W.**

BRANCH ADDRESSES:

Albert Square,
MANCHESTER.

28 & 30, Church Street,
BIRMINGHAM.

65 & 67, Bothwell Street,
GLASGOW.

76, Woodhouse Lane,
LEEDS.

# Complete List of Contracts Open.

| DATE OF DELIVERY. | WORK TO BE EXECUTED. | FOR WHOM. | FROM WHOM FORMS OF TENDERS MAY BE OBTAINED. |
|---|---|---|---|
| | **BUILDING:** | | |
| Aug. 27 | Halifax—Administrative Block | Guardians | W. C Williams, 29 Southgate, Halifax. |
| „ 27 | Goldthorpe, Yorks—School, &c. | School Board | R. Higginbottom, Thurnscoe, Rotherham, and W. H. Wagstaff Saltergate, Chesterfield. |
| „ 27 | Halifax—Warehouse, &c. | —— | Jackson & Fox, Architects, Rawson Street, Halifax. |
| „ 27 | Abertillery, Mon—Inn | Webb Brothers & Co. | R. L. Roberts, Architect, Abercarn. |
| „ 27 | Amble. Northumberland—House, &c. | —— | E. D. Richardson, 7 Gibson Street, Amble. |
| „ 28 | Sedbergh, Kendal—Two Villas | G. Sedgwick | S. Shaw, Architect, Highgate, Kendal. |
| „ 28 | Treorky, Wales—House | J. J. Thomas | W. D. Morgan, Architect, Victoria Chambers, Pentre, Glam. |
| „ 29 | Drogheda, Ireland—Cycle Works, &c. | P. J. Fulham | F. H. Tallan, 356 Kildare Street, Dublin. |
| „ 29 | Castleacre, Swaffham, Norfolk—Hall | Oddfellows | J. Spencer, Secretary, Castleacre, Swaffham, Norfolk. |
| „ 29 | Dowlais, Wales—Chapel Works | —— | A. O. Evans, Architect, Pontypridd. |
| „ 29 | London, W.—Room at Public Baths | Paddington Borough Council | E. B. B. Newton, Borough Surveyor, Town Hall, Paddington, W. |
| „ 31 | Chester—Twelve Cottages | Corporation | City Surveyor, Town Hall, Chester. |
| „ 31 | New Malden—Offices, &c. | Maldens and Coombe U.D.C. | W. Hope, Architect, Seymour Road, Hampton Wick |
| „ 31 | Bristol—Warehouses | Docks Committee | W. W. Squire, Engineer, Underfall Yard, Cumberland Rd., Bristol |
| „ 31 | Turnberry, Glasgow—Hotel | Glasgow & South Western Rly. | J. Miller, 15 Blythewood Square, Glasgow. |
| „ 31 | Burton-in-Lonsdale, Kirkby Lonsdale—School, &c. | Trustees | R. Richardson, Halfway House, Cantsfield, Kirkby Lonsdale. |
| „ 31 | Guildford—Underground Convenience | Town Council | C. G. Mason, Borough Surveyor, Tunsgate, Guildford. |
| „ 31 | Erith, Hunts—Wood Flooring, &c., to Bridge | Ely County Councils | H. Leete, County Surveyor, Huntingdon. |
| „ 31 | Eassie, Scotland—Waiting Rooms, &c. | Caledonian Railway Co. | Company's Divisional Engineer, General Station, Perth. |
| „ 31 | Manchester—Builders' Work | Tramways Committee | J. M. M'Elroy, 55 Piccadilly, Manchester. |
| „ 31 | Rhymney, Mon—Twenty-nine Houses | Victoria Building Club | J. Ll. Smith & Davies, Architects, Aberdare. |
| „ 31 | Salcombe, Devon—Rebuilding Church | —— | Vicar, Vicarage, Salcomb, Devon. |
| „ 31 | Sennen, Cone, Land's End, Cornwall—Hotel | —— | H. White, Architect, Penzance. |
| „ 31 | Thornton-le-Fylde—Air Compressing Station | Joint Sewerage Committee | A. Hindle, 44 Abingdon Street, Blackpool. |
| „ 31 | Whickham, Durham—Council Offices, &c. | Urban District Council | J. B. Renton, Surveyor, Whickham. |
| „ 31 | Dover—Church | —— | Cresswell & Newman, 54 Castle Street, Dover. |
| „ 31 | London, E.—Repairs, &c, to Infirmary | Guardians | E. R. Woodward, 61 Bartholomew Close, E.C. |
| Sept. 1 | Aylesbury—Repairing, &c. Town Hall | Urban District Council | J. H. Bradford, Surveyor, Town Hall, Bradford. |
| „ 1 | Carlisle—Twelve Houses | W. Johnstone | Johnstone Brothers, 39 Lowther Street, Carlisle. |
| „ 1 | Derby—Carsheds | Corporation | J. Ward, Borough Surveyor, Babington Lane, Derby. |
| „ 1 | Sigford, near Ashburton, Devon—Three Cottages | —— | A. Warren, Architect, Buckfastleigh. |
| „ 2 | Tooting, S.W.—Additions to Hospital | Metropolitan Asylums Board | T. W. Aldwinckle & Son, 20 Denman Street, London Bridge, S.E. |
| „ 2 | Kanturk—Eighty-three Cottages | Rural District Council | T. Guiney, Clerk to Council, Board Room, Workhouse, Kanturk. |
| „ 2 | Abercynon, Wales—School | Llanwonno School Board | A. O. Evans, Architect, Post Office Chambers, Pontypridd. |
| „ 2 | Easington, Durham—Brick Wall, &c. | Union Guardians | Farthing & Dunn, Archts., Shakespeare Chbrs., Newcastle-on-Tyne. |
| „ 2 | Halifax—Offices, &c. | Tramways and Elec. Committee | J. Lord, Borough Engineer, Town Hall, Halifax. |
| „ 3 | Bermondsey Offices, &c., at Town Hall | Borough Council | R J. Angel, Borough Surveyor, Town Hall, Spa Road, S.E. |
| „ 3 | Trealaw, Wales—School | Ystradyfodwg School Board | J. Rees, Architect, Hillside Cottage, Pentre. |
| „ 4 | Culver Cliff, nr. Sandown, Isle of Wight—Coastguard Bldgs. | Admiralty | Superintending Engineer, H.M. Dockyard, Portsmouth. |
| „ 4 | Barry Docks—Mercantile Marine Office | Commissioners of H.M. Works, &c | Secretary, H.M. Office of Works, &c., Storey's Gate, S.W. |
| „ 4 | Batley—Town Hall Extensions | Corporation | W. Hanstock & Son, Architects, Branch Road, Batley. |
| „ 5 | Batley—Tower | —— | O. J. Kirby, Borough Surveyor, Branch Road, Batley. |
| „ 7 | Ballina—Diocesan Seminary | Most Rev. Dr. Conmy | W. H. Byrne & Son, 20 Suffolk Street, Dublin. |
| „ 7 | Cannock, Staffs—Hospital | Rural District Council | H. M. Whitehead, Council's Engineer, Penkridge, near Stafford. |
| „ 8 | Cannock, Staffs—Laundry Alterations | Guardians | A Veall, 84 Darlington Street, Wolverhampton. |
| „ 8 | Bermondsey Extension of Buildings, &c. | Borough Council | R. J. Angel, Borough Surveyor, Town Hall, Spa Road, S.E. |
| „ 10 | Kingswood, near Bristol—School | Gloucestershire Educ. Committee | J. Mackay, Architect, Richmond Place, Kingswood. |
| „ 11 | London, E.—Bandstand, &c | London County Council | Architect's Dept., General Constrn. Sec, 15 Pall Mall East, S.W. |
| „ 11 | Hastings—Lodge | Corporation | P. H. Palmer, Borough Engineer, Town Hall, Hastings. |
| „ 14 | Armagh—Four Cottages, &c. | Lunatic Asylum Committee | R. H. Dorman, Court House, Armagh. |
| „ 14 | Penygraig, Wales—Departments for Boys and Girls | Ystradyfodwg School Board | J. Rees, Hillside Cottage, Pentre. |
| „ 14 | Pontypridd—Public Offices | Urban District Council | H. T. Hare, 13 Hart Street, London, W.C. |
| „ 14 | Hemsworth—Fifteen Houses | —— | J. Simmons, Hague Lane, Hemsworth. |
| „ 14 | Westgate—Rebuilding Hotel | —— | J. Jackson, Architect, Barry Street, Bradford. |
| „ 14 | Leeds—Five Houses, &c. | F. Terry | W. M. Coggill, Architect, Stourton, Hunslet. |
| „ 14 | Nottingham—School | School Board | F. B. Lewis, Architect, Barry Street, Bradford. |
| „ 14 | Bramhope—House | —— | Child & Co., 149 Park Lane, Leeds. |
| „ 14 | Woodhouse—Club Premises | North-West Ward, Liberal Asso. | T. A. Buttery and S. B. Birds, 1 Basinghall Square, Leeds. |
| „ 14 | Whitby—Additions to Brewery | R. D. Spaven & Co. | H. G. Walker, Architect, Skinner Street, Whitby. |
| „ 14 | Thurles—Residence | —— | W. Maher, Main Street, Thurles. |
| „ 14 | Glyncorrwg—Four Houses | —— | D. Lewis, Glyncorrwg. |
| „ 14 | Winfrith—Alterations to House | E. Hughes | F. R. Bates, Architect, Newport, Mon. |
| „ 14 | Bishop Auckland—Minister's House | —— | T. E. Davidson, Architect, Newcastle-on-Tyne. |
| „ 14 | Hereford—Repository | Greenland's, Ltd. | W. W. Robinson, Architect, King Street, Hereford. |
| „ 14 | Brampton—Residence | —— | Rev. T. W. Willis, Lanercost Vicarage, Brampton. |
| „ 14 | Salford—School | —— | L. C. Evans, Town Clerk, Town Hall, Salford. |
| „ 14 | Wimbledon—Two Blocks of Flats | Soldiers' and Sailors' Fam. Assoc. | C. E. L. Parkinson, 44 Bedford Row, W.C. |
| „ 14 | Colchester—Wesleyan Church and School | —— | Coodey & Cressall, Architects, Victoria Chamber, Colchester. |
| „ 14 | Macclesfield—Shop | Equitable Provident Society | J. Wright, Architect, Macclesfield. |
| „ 14 | Bingley—Detached Residence | —— | E. H. Parkinson, Architect, Old Branch Chambers, Bradford. |
| „ 14 | Longfleet—Infirmary Buildings at Workhouse | —— | H. F. J. Barnes, Architect, Poole. |
| „ 14 | Leeds—Additions to Council School | Education Committee | W. S. Braithwaite, Architect, Calverley Street, Leeds. |
| „ 14 | Keswick—Reslating Inn and Cottage | —— | Jennings Brothers, Ltd., Castle Brewery, Cockermouth. |
| „ 14 | Hull—Villa | —— | J. M. Dossor, 2 Manor Street, Hull. |
| „ 16 | Birmingham—Boiler House, &c. | Corporation | Mansergh & Sons, 5 Victoria Street, Westminster, S.W. |
| „ 17 | Preston—Power Station, &c. | Corporation | W. H. Tittensor, 25 Burrow Road, Preston. |
| „ 17 | Wern, Salop—Market House and Assembly Hall | Urban District Council | J. Brown, 12 Castle Street, Shrewsbury. |
| „ 18 | Portsmouth—Manual Instruction Centres | Education Committee | A. H. Bone, Architect, Cambridge Junction, Portsmouth. |
| | **ENGINEERING:** | | |
| Aug. 27 | Glasgow—Arc Lamps | Corporation | Lighting Department, 52 College Street, Glasgow. |
| „ 28 | Apulia, Italy—Aqueduct | —— | Commercial Intelligence Branch, Board of Trade, 50 Parliament Street, S.W. |
| „ 29 | Devonport—Gasholder | Corporation | S. E. Stevenson, Engineer, Gasworks, Devonport. |
| „ 29 | Kempston—Waterworks | Urban District Council | Beesley, Son & Nichols, 11 Victoria Street, Westminster, S.W. |
| „ 31 | Belfast—Graving Dock | Harbour Commissioners | G. F. L. Giles, Engineer, Harbour Office, Belfast. |
| „ 31 | Aberdeen—Quay Widening | Harbour Commissioners | R. G. Nicol, Engineer, Aberdeen. |
| „ 31 | London, N.E. Arc Lamps, &c. | Hackney Borough Council | R. Hammond, 54 Victoria Street, Westminster, S.W. |
| „ 31 | Ennis—Water Supply | Management Committee | J. Enright, Clerk, Asylum Board Room, Ennis. |
| „ 31 | Haslemere, Surrey—Pipelaying | Hambledon R.D.C. | R. B. Grantham & Sons, 23 Northumberland Avenue, W.C. |
| Sept. 1 | Hounslow—Fire Engine | Urban District Council | H. J. Baker, Clerk, Town Hall, Hounslow. |
| „ 1 | Southampton—Pumping Engines | Corporation | J. A. Crowther, 123 High Street, Southampton. |
| „ 2 | Corrientes—Waterworks | —— | Engineer-in-Chief, Rividavia 1,255, Buenos Aires. |
| „ 3 | Aston, Birmingham—Reconstructing Tramways | Urban District Council | R. Green, 37 Waterloo Street, Birmingham. |
| „ 5 | Radcliffe, Lancs—Tramway and Lighting Feeders, &c. | Urban District Council | S. Mills, Clerk, Council Offices, Radcliffe. |
| „ 7 | Pietermaritzburg—Electric Tramway | Corporation | Mordey & Dawbarn, 82 Victoria Street, London, S.W. |
| „ 8 | Cannock—Laundry Machinery | Guardians | Wilcox & Raikes, 63 Temple Row, Birmingham. |
| „ 8 | Dixmude-Ypres-Paperinghe—Railway | Société Nationale des Chemins de Fer Vicinaux. | Director-General, 14 Rue de la Science, Brussels. |
| „ 11 | Palamos—Telephone System | —— | Registry of Directorate of Posts and Telegraphs, 10 Calle de Carritas, Madrid. |
| „ 12 | Sydney—Electric Tramway Generating Set | Railway Commissioners | Agent-General for New South Wales, 9 Victoria Street, S.W. |
| „ 14 | Portsmouth—Repairs to Pumps | Corporation | Borough Engineer, Town Hall, Portsmouth. |
| „ 18 | Rio de Janeiro—Rolling Stock | Brazilian Central Railway Co. | Commercial Intelligence Branch, Board of Trade, 50 Parliament Street, S.W. |
| „ 20 | London, W.—Sweeping Machine | Paddington Borough Council | E. B. B. Newton, Borough Surveyor, Town Hall, Paddington, W. |
| „ 22 | Jassy, Roumania—Waterworks | Corporation | Mayor, Jassy, Roumania |
| „ 23 | Estremoz-Castello de Vide—Railway | Portugal State Railways | Sessions Hall, Council of Administration of State Rlys., Lisbon. |
| „ 28 | Launceston, Tasmania—Electric Meters | —— | J. Terry & Co., 7 Great Winchester Street, E.C. |
| „ 30 | Brisbane, Queensland—Postal and Telegraph Material | —— | Department Stores, Navy Street, Brisbane. |
| Oct. 1 | Utrecht, Netherlands—Electricity Supply Station | Town Council | Gemeente-Secretaire of Utrecht. |
| „ 5 | Dublin—Electric Crane | Port and Docks Board | J. P. Griffith, Engineer, East Wall, Dublin. |

# Complete List of Contracts Open —*continued*

| DATE OF DELIVERY. | WORK TO BE EXECUTED. | FOR WHOM. | FROM WHOM FORMS OF TENDERS MAY BE OBTAINED. |
|---|---|---|---|
| | **ENGINEERING**—*cont.* | | |
| Oct. 6 | London, S.E.—Steam Engines | London County Council | County Hall, Spring Gardens, S.W. |
| „ 6 | Vauxhall—Steel Superstructure and Granite Piers of Bridge | London County Council | Engineer's Department, County Hall, Spring Gardens, S.W. |
| „ 10 | Valencia—Port Works | Committee | Secretaria da la Junta de obras del, puerto de Valencia. |
| „ 30 | Marina, Upper Barracca, Malta—Lift | Crown Agents for the Colonies | Receiver-General and Director of Contracts, Valletta, Malta. |
| Dec. 15 | Los Andes, Chili—Railway | —— | Commercial Intelligence Branch, Board of Trade, 50 Parliament Street, S.W. |
| 1904.<br>Feb. 1 | Cairo—Three Road Bridges over Nile | Ministry of Public Works | Commercial Intelligence Branch, Board of Trade, 50 Parliament Street, S.W. |
| No date. | Canea—Electric Lighting | —— | Municipality, Canea, Crete, Turkey. |
| „ | Rio de Janeiro—Netheroy Electric Railway | —— | Commercial Intelligence Branch, Board of Trade, 50 Parliament Street S.W. |
| | **FURNITURE:** | | |
| Aug. 31 | Carlisle—Furniture at School | Cumberland Educa. Committee | C. C. Hodgson, County Secretary, The Courts, Carlisle. |
| | **IRON AND STEEL:** | | |
| Aug. 31 | Ennis—Cast-iron Pipes | Lunatic Asylum Committee | F. O'Connor, Architect, Ennis, Ireland. |
| „ 31 | London, E.C.—Rails | Burma Railways Co | Secretary, 76 Gresham House, Old Broad Street, E.C. |
| „ 31 | Manchester—Roof Trusses | Tramways Committee | J. M. M'Elroy, 55 Piccadilly, Manchester. |
| Sept. 9 | Leicester—Roofs to Engine and Boiler Houses | Corporation | E. G. Mawbey, Borough Surveyor, Town Hall, Leicester. |
| „ 11 | London, E.—Iron Railings | London County Council | Architect's Department, General Construction Section, 15 Pall Mall East, S.W. |
| | **PAINTING AND PLUMBING:** | | |
| Aug. 27 | Halifax—Painting Block at Workhouse | —— | W. C. Williams, 29 Southgate, Halifax. |
| „ 28 | Lisbon, Portugal—Putty | South and South-East State Railways. | Company's Offices, 22 Largo de San Roque, Lisbon. |
| „ 29 | Harrow—Painting | Urban District Council | J. P. Bennetts, Council Offices, Harrow. |
| „ 31 | Wickham Market, Suffolk—Leadwork, &c. | —— | J. S. Corder, Wimborne House, Ipswich. |
| „ 31 | London, E.—Painting Infirmary | Guardians | E. R. Woodward, 61 Bartholomew Close, E.C. |
| Sept. 2 | Halifax—Painting Offices | Tramways Committee | J. Lord, Borough Engineer, Town Hall, Halifax. |
| „ 2 | Dartford, Kent—Painting, &c., at Asylum | Metropolitan Asylums Board | T. D. Mann, Clerk, Board's Offices, Embankment, E.C. |
| | **ROADS AND CARTAGE:** | | |
| Aug. 28 | Swansea—Widening, &c. | Rural District Council | E. Harris, Clerk, Council Offices, Alexandra Road, Swansea. |
| „ 28 | Sidmouth—Widening Turnpike, Roads, &c. | Urban District Council | R. Lake, Surveyor, Council Offices, Sidmouth. |
| „ 29 | Harrow—Making-up Roads | Urban District Council | J. P. Bennetts, Engineer, Council Offices, Harrow. |
| „ 31 | Kettering—Streets, &c. | Urban District Council | T. R. Smith, Council's Surveyor, Market Place, Kettering. |
| „ 31 | Farnborough—Materials, &c. | Urban District Council | J. E. Hargreaves, Surveyor, Town Hall, Farnborough. |
| „ 31 | Swindon—Street Works | Corporation | H. J. Hamp, Borough Surveyor, Town Hall, Swindon. |
| „ 31 | Preston, Lancs—Steam Rolling | Lancashire C.C. | W. H. Schofield, County Surveyor, County Office, Preston. |
| „ 31 | Preston, Lancs—Carting Granite Macadam | Lancashire C.C. | W. H. Schofield, County Surveyor, County Office, Preston. |
| „ 31 | Preston, Lancs—Granite Macadam | Lancashire C.C. | W. H. Schofield, County Surveyor, County Office, Preston. |
| Sept. 1 | Aldershot—Granite | Urban District Council | N. F. Denniss, Surveyor, Council Offices, Aldershot. |
| „ 1 | Dunstable—Granite | Town Council | G. Simcox, Borough Surveyor, Town Hall, Dunstable. |
| „ 1 | Needham Market, Suffolk—Concrete Paving | —— | H. Miller, 16 Museum Street, Ipswich. |
| „ 1 | North Shields—Paving Works | Corporation | J. F. Smillie, Borough Surveyor, North Shields. |
| „ 2 | Esher—Making-up Street | Urban District Council | E. A. Everett, Clerk, Portsmouth Road, Thames Ditton. |
| „ 2 | Claygate—Making-up Road | Urban District Council | E. A. Everett, Clerk, Portsmouth Road, Thames Ditton. |
| „ 4 | Exeter—Roadway | —— | Ellis, Son & Bowden, Surveyors, Bedford Chambers, Exeter. |
| „ 5 | Heswell, Cheshire—Lane Construction | Rural District Council | T. Davies, 33 Kingsland Road, Birkenhead. |
| „ 5 | London, S.W.—Road, &c. | —— | E. Millard, 1 Finsbury Circus, E.C. |
| „ 5 | Thornhill, near Dewsbury—Flagging, &c. | Urban District Council | S. W. Parker, Surveyor, Council Offices, Thornhill. |
| „ 7 | Camberwell, S.E.—Paving Roadway | Borough Council | W. Oxtoby, Borough Engineer, Town Hall, Camberwell, S.E. |
| „ 8 | Barking, Essex—Making-up, &c. | Urban District Council | C. F. Dawson, Council's Surveyor, Public Offices, Barking. |
| „ 21 | Paddington—Making-up and Paving Roads | Borough Council | E. B. B. Newton, Borough Surveyor, Town Hall, Paddington, W. |
| „ 31 | Dunstable—Steam Rolling | Town Council | G. Simcox, Borough Surveyor, Town Hall, Dunstable. |
| No date | Birmingham—Tramway Materials | Tramways Committee | J. Price, City Engineer, Council House, Birmingham. |
| „ | Huddersfield—Whinstone | —— | A. Graham & Sons, Contractors, Huddersfield. |
| | **SANITARY:** | | |
| Aug. 27 | Ilford—Sewer | Urban District Council | H. Shaw, Council's Surveyor, Town Hall, Ilford. |
| „ 29 | Selby, Yorks—Cleansing, &c., Drains | Dam Drainage Commissioners | R. B. Parker, Clerk, Commissioners' Office, Abbey Yard, Selby. |
| „ 29 | Wigan—Scavenging | Rural District Council | H. Ackerley, 9 Victoria Buildings, King Street, Wigan. |
| „ 31 | Southwick, Sussex—Removal of Refuse | Urban District Council | G. W. Warr, Surveyor, Southwick, Sussex. |
| „ 31 | Aylesbury—Sewage-Disposal Works | Urban District Council | G. Chatterton, 6 The Sanctuary, Westminster, S.W. |
| „ 31 | Guildford—Underground Convenience | Town Council | C. G. Mason, Borough Surveyor, Tuns Gate, Guildford |
| Sept. 1 | Windsor—Removal of Refuse | Town Council | Town Clerk, 3 Park Street, Windsor. |
| „ 2 | Thames Ditton—Sewers, &c. | Urban District Council | E. A. Everett, Council Offices, Portsmouth Road, Thames Ditton. |
| „ 2 | Dartford, Kent—Sanitary Work | Metropolitan Asylums Board | T. D. Mann, Clerk, Board's Offices, Embankment, E.C. |
| „ 6 | Portsmouth—Sewage-Collecting Tank, &c. | Corporation | Borough Engineer, Town Hall, Portsmouth. |
| | **TIMBER:** | | |
| Sept. 14 | Egypt—Timber for Wagons | Egyptian State Railways | Commercial Intelligence Branch, Board of Trade, 50 Parliament Street, S.W. |
| „ 28 | London, E.C.—Telegraph Poles | —— | S. C. Hoolley, 17-19, Bedford Street, London, W.C. |

# List of Competitions Open.

| DATE OF DELIVERY. | DESIGNS REQUIRED. | AMOUNT OF PREMIUM. | DEPOSIT REQUIRED FOR CONDITIONS, &c. | BY WHOM ADVERTISED. |
|---|---|---|---|---|
| Aug. 31 | Blackpool—New Offices | —— | £1 1s. | C. Arthur, 34 Victoria Street, Blackpool. |
| Sept. 12 | Stonehaven, Scotland—Alterations and Additions to Town Hall. | —— | —— | G. Murdoch, Borough Surveyor, Stonehaven. |
| „ 12 | Howden, Yorks—Sewerage Improvement | £15 and commission. | —— | H. Green, Clerk, Council Offices, Howden. |
| „ 22 | Ayr—Hospital, &c. | —— | —— | J. E. Shaw, Clerk, Lunacy Board, County Buildings, Ayr. |
| „ 26 | Leyland, Lancs—Laying-out Land, &c. | £15 15s. | —— | M. H. Wilkinson, 21 Towngate, Leyland. |
| „ 29 | Brighton—Hospital | £50, £30, £20. | £1 1s. | L. Holmes, 76 West Street, Brighton |
| „ 30 | Dublin—Workmen's Cottages | £20. | —— | F. B. Ormsby, Secretary, Kingsbridge Terminus, Dublin. |
| Oct. 1 | Heywood—Library | £30, £20, £10. | —— | J. A. Settle, Borough Engineer, Municipal Buildings, Heywood. |
| „ 2 | Bromley, E.—Public Library | £75, £25. | 10s. 6d. | H. Heckford, Borough Surveyor, Council Offices, High Street, Poplar. |
| „ 7 | Saltwood—Sewage Disposal | £31 10s. | —— | R. Lonergan, 11 Cheriton Place, Folkestone. |
| „ 12 | Rawtenstall—Free Library, &c. | £100, £50, £30. | £2. | A. W. Lawson, Borough Surveyor, Municipal Offices, Rawtenstall. |
| 1904<br>Mar. 31 | Vienna—Machinery to Lift Boats on Canal | 100,000, 75,000 and 50,000 kronen. | —— | Austro-Hungarian Consulate-General, 22 Laurence Pountney Lane, E.C. |

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BUILDER'S CLERK (23) wants Situation; good knowledge of building construction, abstracting, and billing. Drawings from rough sketches. Good references. Wages 32s.—F. A. G., 10, Braemar Road, Brentford.

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GENERAL FOREMAN, aged 32, seeks ENGAGEMENT. Reliable, energetic, good manager, and experienced in all branches. Undeniable references.—W. T. C. Bierton Aylesbury, Bucks.

GOOD MASON wants Job. Abstainer. Good draughtsman. Capable of setting out. References. — Mason, Stone Works, Frinton-on-Sea, Essex.

HANDY MAN.—Good Plumber, Gas, Hot Water, e. b.; good all round man, thoroughly competent, wants JOB. 9½d.—Seeder, 47, Clacton Road, Walthamstow.

HOT WATER FITTER'S MATE wants Work; good, strong; age 20; knowledge of smithing.—A. D., 89, Denmark Road, West Kilburn.

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# Current Market Prices.

## FORAGE.

| | | £ | s. | d. | £ | s. | d. |
|---|---|---|---|---|---|---|---|
| Beans .. .. .. | per qr. | 1 | 12 | 0 | 1 | 19 | 0 |
| Clover, best .. .. | per load | 4 | 7 | 6 | 4 | 15 | 0 |
| Hay, best .. .. .. | do. | 3 | 15 | 0 | 4 | 10 | 0 |
| Sainfoin mixture .. | do | 3 | 15 | 0 | 4 | 5 | 0 |
| Straw .. .. .. | do. | 1 | 10 | 0 | 2 | 2 | 0 |

## OILS AND PAINTS.

| | | £ | s. | d. | £ | s. | d. |
|---|---|---|---|---|---|---|---|
| Castor Oil, French .. | pet cwt. | 1 | 1 | 10 | 1 | 2 | 2 |
| Colza Oil, English .. | do. | 1 | 4 | 0 | | — | |
| Copperas .. .. | per ton | 2 | 2 | 6 | | — | |
| Lard Oil .. .. .. | per cwt. | 2 | 15 | 0 | 2 | 17 | 0 |
| Lead, white, ground, carbonate .. .. | do. | 1 | 4 | 10 | | — | |
| Do red .. .. .. | do | 1 | 0 | $4\frac{1}{2}$ | | | |
| Linseed Oil, barrels .. | do. | 0 | 19 | 9 | | — | |
| Petroleum, American .. | per gal | 0 | 0 | $5\frac{7}{8}$ | 0 | 0 | 6 |
| Do Russian .. | do. | 0 | 0 | $4\frac{6}{8}$ | 0 | 0 | $4\frac{8}{4}$ |
| Pitch .. .. .. | per barrel | 0 | 8 | 0 | | — | |
| Shellac, orange .. .. | per cwt | 7 | 16 | 0 | | — | |
| Soda, crystals .. .. | per ton | 3 | 2 | 6 | 3 | 5 | 0 |
| Tallow, Town .. .. | per cwt | 1 | 6 | 3 | 1 | 6 | 6 |
| Tar, Stockholm .. .. | per barrel | 1 | 0 | 6 | | — | |
| Turpentine .. .. | per cwt. | 2 | 2 | 0 | | — | |

## METALS.

| | | £ | s. | d. | £ | s. | d. |
|---|---|---|---|---|---|---|---|
| Copper, sheet, strong .. | per ton | 75 | 0 | 0 | | — | |
| Iron, Staffs., bar.. .. | do. | 6 | 5 | 0 | 8 | 10 | 0 |
| Do Galvanised Corrugated sheet .. | do. | 11 | 0 | 0 | 11 | 2 | 6 |
| Lead, pig, Soft Foreign.. | do. | 11 | 3 | 9 | 11 | 5 | 0 |
| Do. do. English common brands.. .. | do. | 11 | 10 | 0 | | — | |
| Do. sheet English 3lb. per sq. ft and upwards .. | do. | 14 | 0 | 0 | | — | |
| Do. pipe .. .. . | do. | 15 | 0 | 0 | | — | |
| Nails, cut clasp, 3in. to 6in. | do. | 9 | 5 | 0 | | — | |
| Do. floor brads .. | do. | 9 | 0 | 0 | | — | |
| Steel, Staffs., Girders and Angles .. .. | do. | 5 | 15 | 0 | 11 | 5 | 0 |
| Do do. Mild bars .. | do. | 6 | 7 | 6 | 7 | 2 | 6 |
| Tin Foreign .. .. | do. | 128 | 7 | 6 | 128 | 17 | 6 |
| Do. English ingots .. | do. | 130 | 0 | 0 | | — | |
| Zinc, sheets, Selesian .. | do. | 23 | 5 | 0 | | - | |
| Do. do. Vielle Montaigne | do. | 23 | 10 | 0 | | — | |
| Do Spelter .. .. | do. | 20 | 17 | 6 | 21 | 2 | 6 |

## TIMBER.

### Soft Woods

| | | £ | s. | d. | £ | s. | d. |
|---|---|---|---|---|---|---|---|
| Fir, Dantzic and Memel | per load | 1 | 13 | 0 | 3 | 0 | 0 |
| Pine, Quebec, Yellow .. | do. | 5 | 5 | 0 | 6 | 5 | 0 |
| Do. Pitch .. .. | do. | 2 | 12 | 0 | 3 | 3 | 0 |
| Laths log, Dantzic .. | per fath. | 4 | 10 | 0 | 5 | 10 | 0 |
| Do. Petersburg .. | do. | 7 | 5 | 0 | | — | |
| Deals, Umbra, Dry Yellow, 2nd, 3×9 | per load | 10 | 10 | 0 | | — | |
| Do. Skelleftea, Yellow, 3×9 | do. | 6 | 15 | 0 | | — | |
| Do. Trangsund, Unsorted Yellow, 2½×7 | do. | 9 | 5 | 0 | | — | |
| Do. Holmsund, Yellow, 3×9 | do. | 6 | 5 | 0 | | — | |
| Do. St. Petersburg, Yell., 2nd, 3×7 | do. | 10 | 0 | 0 | | — | |
| Do. do. do. do. 3×7 | do. | 10 | 10 | 0 | | — | |
| Do. do. White 3rd, 3×9 | do. | 8 | 5 | 0 | | — | |
| Do. do. do. do. 2½×7 | do. | 8 | 15 | 0 | | — | |
| Do. Archangel, Yellow, 1st, 3×9 | do. | 10 | 0 | 0 | | — | |
| Do. do. do. 2nd, 3×9 | do. | 10 | 0 | 0 | 17 | 10 | 0 |
| Do. do. do. do. 3×8 | do. | 15 | 0 | 0 | | — | |
| Do. do. do. do. 3×7 | do. | 13 | 15 | 0 | | — | |
| Do. do. do. 3rd, 3×9 | do. | 10 | 0 | 0 | 13 | 15 | 0 |
| Do. do. do. do. 3×8 | do. | 9 | 15 | 0 | | — | |
| Do. do. do. do. 3×7 | do. | 10 | 10 | 0 | | — | |
| Do. do. do. do. 2½×7 | do. | 10 | 5 | 0 | | — | |
| Do. do. do. 4th, 3×9 | do. | 9 | 15 | 0 | | — | |
| Do. do. do. mixed, 3×11×5ft. to 11ft. | do. | 4 | 5 | 0 | | — | |
| Do. do. do. do. 3×9×5ft. to 11ft. | do. | 4 | 5 | 0 | | — | |
| Deals, Söderhamn, inferior, 5th Yellow, 3×9 | per load | 8 | 5 | 0 | | — | |
| Do. Oserka, Yellow, 4th. 4×9 | do. | 10 | 15 | 0 | | — | |
| Do. do. do. 3×9 | do. | 10 | 5 | 0 | | — | |
| Do. Libau, White, 1st, 3×11 | do. | 7 | 10 | 0 | | — | |
| Do. do. do. do. 3×9 | do. | 7 | 10 | 0 | | — | |
| Do. do. do. 2nd, 3×11 | do. | 7 | 10 | 0 | | — | |
| Do. do. do. do. 3×9 | do. | 7 | 10 | 0 | | — | |
| Do. do. do. do. 3×8 | do. | 7 | 10 | 0 | | — | |
| Do. Galatz, White, 1st, 3×11 | do. | 8 | 0 | 0 | | — | |
| Do. do. do. do. 3×9 | do. | 8 | 0 | 0 | | — | |
| Do. do. do. do. 3×9 | do. | 8 | 5 | 0 | | — | |
| Do. Pernoviken, Yellow, 1st, 2½×8 | do. | 9 | 5 | 0 | | — | |
| Do. do. do. 2nd, 2½×8 | do. | 9 | 5 | 0 | | — | |
| Do. Pascagoula, prime Pitch Pine, 3×9 | do. | 10 | 0 | 0 | | — | |
| Do. Ljusne, Yellow, 4th, 2½×7 | do. | 10 | 10 | 0 | | — | |
| Do. do. do. 5th, 2½×7 | do. | 9 | 15 | 0 | | — | |
| Do. Riga, unsorted White, 2½×7 | do. | 8 | 0 | 0 | | — | |
| Do. Mesane, White, 3×11×5 to 11ft. | do. | 9 | 5 | 0 | | — | |
| Do. Dalhousie, Spruce, 1st, 3×10 | do. | 7 | 5 | 0 | | — | |
| Do. do. do. 2nd, 3×10 | do. | 7 | 5 | 9 | | - | |
| Do. do. do. 3rd, 3×10 | do. | 7 | 5 | 0 | | — | |
| Do. Quebec, Spruce, 3×9 | do. | 7 | 10 | 0 | | — | |
| Do. do. Unsorted Red Pine, 3×9 | do. | 8 | 15 | 0 | | — | |
| Do. Montreal, Yellow, Pine, 1st, 3×11 | do. | 28 | 10 | 0 | | — | |
| Do. do. do. do. 3×11 | do. | 28 | 5 | 0 | | — | |
| Battens, all kinds .. | do. | 8 | 0 | 0 | 16 | 5 | 0 |
| Flooring Boards 1in. prepared, 1st .. .. | per square | 0 | 10 | 6 | 0 | 10 | 9 |
| Do. 2nd .. .. | do. | 0 | 10 | 9 | | — | |
| Do. 3rd &c. .. .. | do. | 0 | 8 | 6 | 0 | 13 | 3 |

### Hard Woods.

| | | £ | s. | d. | £ | s. | d. |
|---|---|---|---|---|---|---|---|
| Ash, Quebec .. .. | per load | 3 | 12 | 6 | | — | |
| Birch, Quebec .. .. | do. | 3 | 12 | 6 | 3 | 17 | 6 |
| Box, Turkey .. .. | per ton | 15 | 0 | 0 | 20 | 0 | 0 |
| Cedar, Cuba .. .. | per ft. sup. | 0 | 0 | $5\frac{1}{4}$ | | — | |
| Do. Honduras .. | do. | 0 | 0 | $5\frac{31}{32}$ | | — | |
| Do. Tobasco .. .. | do. | 0 | 0 | $4\frac{31}{32}$ | | — | |
| Elm, Quebec .. .. | per load | 4 | 0 | 0 | | — | |
| Mahogany, Average Price for Cargo, Honduras .. | per ft. sup. | 0 | 0 | $6\frac{1}{32}$ | | — | |
| Do. African .. | do. | 0 | 0 | $3\frac{31}{32}$ | 0 | 0 | $4\frac{23}{32}$ |
| Do. St. Domingo | do. | 0 | 0 | $3\frac{29}{32}$ | | — | |
| Do Cuba .. | do. | 0 | 0 | $5\frac{18}{32}$ | 0 | 0 | $6\frac{9}{32}$ |
| Do Gaboon .. | do. | 0 | 0 | $3\frac{15}{32}$ | | — | |
| Do Tobasco .. | do. | 0 | 0 | $6\frac{11}{32}$ | 0 | 0 | $8\frac{1}{4}$ |
| Oak, Dantzic and Memel | per load | 3 | 5 | 0 | 3 | 15 | 0 |
| Do. Quebec .. | do. | 6 | 5 | 0 | 6 | 10 | 0 |
| Teak, Rangoon, planks.. | do. | 16 | 0 | 0 | 17 | 10 | 0 |

**Architectural Association Awards.**—The following further awards are announced in the current number of "A.A. Notes":—School of design: elementary class, H. A. Hall (prize value three guineas and a bronze medal), M. E. Webb (certificate); advanced class, J. MacLaren Ross (prize value five guineas, bronze medal and pass for modelling class), G. Drysdale (certificate and pass for modelling class); essay prize value ten guineas, with silver medal, John Swarbrick; Andrew Oliver prize, P. W. Lovell (prize value two guineas), B. Drummond and L. L. Jeeves (prizes value one-and-a-half guineas each).

# New Companies.

Aber and Rhymney Valleys Land and Building Co., Ltd., to erect cottages. houses, &c., forty dwelling-houses and one shop, Ffrwd Offices, Mountain Ash.

# Bankruptcies.

[Abbreviations: R.O.—receiving order; P.E.—public examination; C.C.—county court; O.R.—official receiver; Adj.—Adjudication.]

During the week ending August 22nd six failures in the building and timber trades in England and Wales were gazetted.

C. E. Chappel, builder and contractor, Stockton Heath R.O. August 13th.

O. G. Pritchard, joiner and contractor, Liscard. Liabilities £1,677; assets £200; deficiency £1,477.

Montague & Fancy, builders, Upper Parkstone. R.O. August 11th.

W. Keen & Co., builders, Walthamstow and Mitcham. R.O. August 12th.

J. R. Winstanley, quantity surveyor, Barrow-in-Furness. R.O. August 12th.

Sneap & Gittins, builders, Stapleford. Liabilities £1.078; assets £829.

G. W. Rainer, joiner and builder. Broughton Astley. Liabilities £862: assets £242.

R. T. Hartop, builder, Plymouth. Gross liabilities £2,451; £883 to rank for dividend; assets £193; deficiency £697.

W. P. Lloyd, builder, Hereford. First meeting, 2, Offa Street, Hereford, August 26th, at 12. P.E., Hereford Shirehall, August 31st, at 10.30.

W. G. Lee, builder, Folkestone. R.O. and adj. August 12th. First meeting, O.R.'s, Canterbury, August 27th, at 10. P.E., Canterbury Guildhall, September 17th, at 10.

G. R. H. Wales, builder, South Hackney. R.O. August 8th. P.E., Bankruptcy Court, October 6th, at 11.

J. W. Stockton, general and ornamental mason, Winsford. R.O. and adj. August 6th. First meeting, Royal Hotel, Crewe, August 28th, at 10.30. P.E., Crewe Court Room, same day, at 11.

J. B. Spinks. builder and decorator, Forest Hill. R.O. and adj. August 10th. First meeting, 24, Railway Approach, London Bridge, August 27th, at 12.30. P.E., Greenwich C.C., September 1st, at 1.

F. Woodward, builder and contractor, Oldham. R.O. and adj. August 10th. First meeting, O.R.'s, Oldham, August 28th, at 12. P.E., Oldham C.C., September 18th, at 11.

T. & C. Berrill. builders and contractors, Irchester. R.O. August 5th. First meeting, Hind Hotel, Wellingborough, August 26th, at 3.30. P.E., Northampton County Hall, October 20th, at 12.

R. Davies, builder and contractor, Conway. R.O. and adj. August 1st. First meeting, Crypt Chambers, Chester, August 26th, at 2.30. P.E., Bangor Magistrates' Room. September 3rd, at 12.30.

F. W. Reavell, builder and contractor, Knaphill and Farnborough. R.O. and adj. August 5th. First meeting, 24. Railway Approach, London Bridge, S.E., August 26th, at 12.30. P.E., Guildford Town Hall, October 6th, at 1.

A. T. Haines & Co., builders, West Ham. Liabilities £92,175; £4.713 to rank for dividend; assets £2,246. Since November, 1897. the debtors have erected more than 700 houses in East Ham and West Ham, and they attribute their failure to depreciation in the value of their property.

The following company is to be wound up:—

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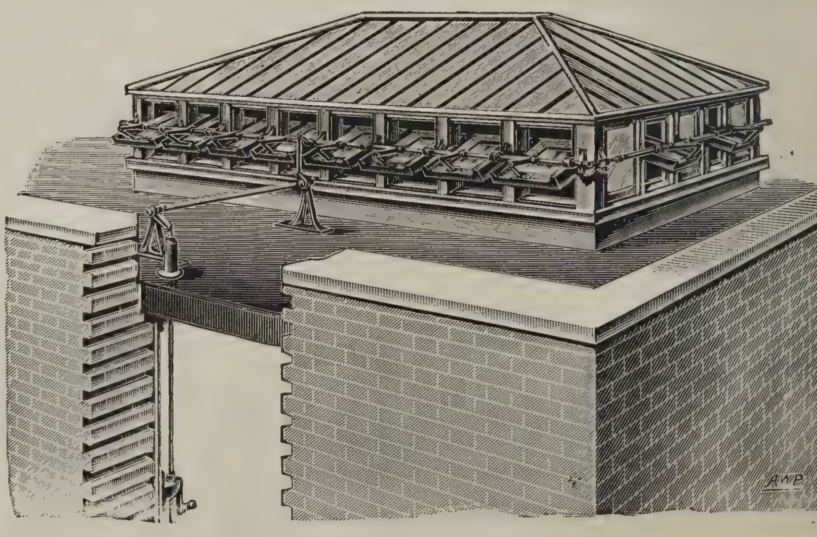

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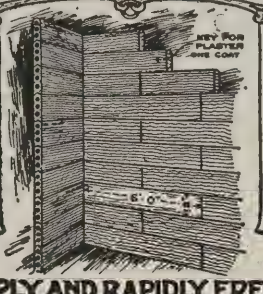
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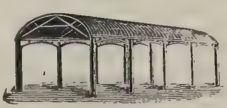

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# Coming Events.

**Friday, August 28.**

SANITARY INSPECTORS' ASSOCIATION. — Extraordinary General Meeting of Members at Holborn Restaurant at 6.45 p.m.

**Saturday, August 29.**

BRITISH INSTITUTE OF CERTIFIED CARPENTERS.—Visit to Vauxhall Bridge Works at 3 p.m.

SANITARY INSPECTORS' ASSOCIATION.—Excursion to Belgium and International Congress continued to September 12th. Dinner at Grand Hotel, Antwerp, at 6.37 p.m.

**Tuesday, Sept. 1, to Friday, Sept. 4.**

IRON AND STEEL INSTITUTE (Barrow-in-Furness) —Annual Meeting. Inaugural address by Mr. Andrew Carnegie on "Developments of the British and American iron industry during the last thirty years." Mr. R. A. Hadfield on "Alloys of Iron and Tungsten." Mr. J. E. Stead and Mr. A. W. Richards on "The Restoration of dangerously Crystalline Steel by Heat Treatment." Messrs. J. E. Stead and A. Windsor Richards on "Sorbitic Steel Rails." Mr. Thomas Baker on "The Influence of Silicon on Iron." Prof. E. D. Campbell on "Diffusion of Sulphides through Steel." Mr. William Campbell on "The Heat Treatment of Steel." Mr. R. M. Daelen on "The Rolling of Large Pipes." Mr. D. A. Louis on "The Regulation of the Combustion in Coke-oven Practice." Mr. W. F. Pettigrew on "The Fuel used in the Barrow-in-Furness District." Mr. C. H. Ridsdale on "The Diseases of Steel." Prof. A. Stansfield on "Carbon in Iron."

**Monday, Sept. 14.**

SANITARY INSTITUTE.—Lecture on "Mechanical Physics: Laws of Motion, Hydraulics, &c.," at 7.30 p.m., by E. J. Steegmann.

**Wednesday, Sept. 16.**

SANITARY INSTITUTE — Lecture on "Natural Forces: Light, Heat, Electricity; Chemistry," by E. J. Steegmann.

**Friday, Sept. 18.**

SANITARY INSTITUTE.—Lecture on "The Atmosphere: Pressure and Composition; Air; Combustion and Respiration," by E. J. Steegmann.

**Saturday, Sept. 19.**

SANITARY INSTITUTE.—Inspection and Demonstration at "Wimbledon Sewage Works," at 3 p.m., by C. H. Cooper.

NORTHERN ARCHITECTURAL ASSOCIATION.—Excursion to Sunderland.

**Monday, Sept. 21.**

SANITARY INSTITUTE.—Lecture on "Meteorology," by E. J. Steegmann.

**Wednesday, Sept. 23.**

SANITARY INSTITUTE.—Lecture on "Sanitary Law (A): Introductory Remarks, Public Health Acts English, Scotch, Irish; other Statutes relating to Public Health; By-laws (Model. &c.), Regulations, Orders, Memoranda, &c.," by J. Priestley. Inspection and Demonstration in the "District of Islington and at the Borough Disinfecting Station," at 2 p.m, by James R. Leggatt.

**Friday, Sept. 25.**

SANITARY INSTITUTE.—Lecture on "Sanitary Law (B): Public Health London Act; Metropolis Local Management Acts: By-laws and Regulations in Force in the Administrative County of London," by J. Priestley.

**Saturday, Sept. 26.**

SANITARY INSTITUTE.—Inspection and Demonstration at "Southwark and Vauxhall Water Works," Hampton, at 2.30 p.m.

**Monday, Sept. 28.**

SANITARY INSTITUTE.—Lecture on "Sanitary Law (C): Factory and Workshop Acts (including Bakehouse Legislation 1878-95), as they affect the Sanitary Inspector; Smoke Legislation, Food and Drugs Act, 1899," by J. Priestley.

**Wednesday, Sept. 30.**

SANITARY INSTITUTE.—Lecture on "Duties of a Sanitary Inspector—General (A): Outdoor," by J Priestley. Inspection and Demonstration at "John Knight & Sons' Soap Works," Silvertown, at 3 p.m.

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**A new Church Room at Llandudno** has been erected in connection with St. George's Church by Mr. Thomas Jones from designs by Mr. Edwin Turner, who are also responsible for new oak stalls and a clergy desk in the chancel of the church.

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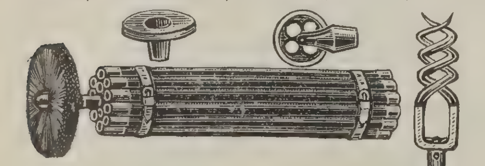

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# BUILDERS' JOURNAL

AND ARCHITECTURAL RECORD.

September 2, 1903. Vol. 18, No. 447. 9, East Harding Street, E.C.

**Clients.** Oliver Wendell Holmes observes that we are all splashed and streaked with sentiments—not precisely the same tints, or in exactly the same patterns, but by the same hand and from the same palette; so that the trivial personalities he deals with find complements in the lives of most people; and thus we become interested in the experiences of one person as representing our own. For this reason architects will be interested in the experience of one of their brethren in the West Riding of Yorkshire, which may be taken as typical of what is entailed by the practice of architecture. After spending five years as pupil in one architect's office, and as many more as an assistant in other offices, he invested in the usual brass plate and furniture and waited patiently for clients. The first came "because he wished to encourage a young man, and he thought that I, being young and inexperienced, ought to do the work at much less than the usual commission," especially as he had planned the houses himself, and "I had only to draw them out"—which is a very ingenious arrangement when you come to think of it. The client of course knew exactly what he wanted—a pair of single-fronted villas, by which he meant a slice of two terrace houses, notwithstanding the fact that he had ample width of site and no restrictions. The newly-fledged architect, after much argument and numerous sketch plans, gave way to his first client's whims and let him have his own ideas carried out. Other clients followed at intervals—the builder-client, the man who looks upon an architect as simply a draughtsman with a certain amount of influence to enable him to obtain the approval of his plans by the local authority, and who explains that he usually draws his own plans, but is too busy, or that his son (who obtained certificates for drawing at the School of Art) used to draw them before he left home. He will then come to the point of the business and ask how much per house you will draw the plans for; and the wise architect will politely decline the work. But perhaps the most amusing type of client is the successful man, whose wife has an ambition to live in "a detached double-fronted villa," which means a front door in the centre and a room on each side, or "a good square house." In this case, whatever the rental value of the house may be, it must have the outward appearance of being 25 per cent. more, and if the lady of the house has any pretention to being artistic she will require it to be of the "Queen Anne style of architecture," at any rate in front. Of course plate-glass windows placed on end, *i.e.*, 4ft. wide by 6ft. high., in two large panes, will be required, otherwise it will not be possible to display the lace curtains to the bay windows. Suggestions as to the plan and internal features and decoration of the house will not be appreciated, because she knows everything about the former, and Messrs. Early & English, art furnishers, are to be let loose inside. Money in this case is no consideration; neither is taste. Then there is the economical client, who expects you to plan his house to fit his furniture, carpets and curtains, so that the keynote of the dining-room will probably be a "handsome carved sideboard," which he has picked up at about one-tenth its original cost. It is indiscreet to suggest that he should give this away or present it to the village club, and the purpose is better served by remarking that its great size will add to the cost of the building; success will be more certain, however, if you can get a friend to give him this advice—his tailor or hairdresser, as he usually consults these before he consults his architect. Last comes the clerical client, who knows something of the styles and orders of architecture, and laments that modern architects cannot build as in the old days, but who has probably shown his veneration for the old architecture by having the village church "restored" by Mr. ——, the eminent church architect, with furnishings by the ecclesiastical art firm; though, as he is now only building a vicarage or a school, he has entrusted a local architect with the commission.

**The First Garden City.** It was announced in our columns a fortnight ago that the Garden City Pioneer Co. had purchased 4,000 acres of land not far from London, where the first experiment would be carried out. We are now able to state that the land is near Hitchin. Here the first garden city is to be built. The site is about 250ft. above sea-level, chiefly faces south, is extremely compact and ready for immediate development. It is about thirty-four miles from London and is in touch with the Great Northern, Midland and Great Eastern railways. The soil is chalk partly overlaid with gravel, and there is an ample supply of good water to be obtained. From the beginning we have given our support to the garden city scheme, as being a wholesome attempt to provide houses amidst pleasant surroundings, in contrast to the miles of barren streets which are unfortunately so characteristic of modern towns. The Garden City Pioneer Co. will have many difficulties to face, but we wish them every success.

**The Embankment.** Once again the Embankment has been alive with steam rollers, contractors' carts and some scores of workmen; with piles of stone here and there and hills of red hoggin on the pavement. One would think, from the frequency of this sight, that the traffic on the roadway was enormous, whereas it is nothing of the kind. The steam rollers have left a smooth enough surface behind them; but it will not be long before the road once more becomes a puddle in rainy weather. Some day the councillors will realise perhaps that macadam is utterly useless for city traffic and decide to lay wood blocks or asphalt on the Embankment. The present method is a perfect farce and a gross waste of money.

**Design and Craft.** Of late years it has been a feature to see design and executed work side by side among the National Competition exhibits. This has been particularly gratifying at a time when efforts are being made to close the breach between the designer and the craftsman; so that the designer has learnt from the workshop what a difference there may be between a design on paper and the same carried out in material. The examiners at South Kensington have taken special note of the fact, but now it seems they are to curb their fancies, for the Board of Education has issued an instruction that the awards are to be made for the merits of the design and should not be influenced by the excellence of the craftwork. Inferior design can certainly be glossed over and made presentable by skilful craftsmanship, but the finished article is after all the main thing: we call to mind several designs at this year's exhibition which greatly depreciated in execution, details such as angles which looked sharp and bold on paper, becoming round and weak by the necessities of manufacture. The Board further announces that next year works executed by the students themselves in actual material, from their own designs, will be considered as a separate class. Here the paper design is nothing, the finished article everything. Still, in the majority of cases the designs have first to be made on paper, and it is then that the skilful designer who is also a craftsman—or at least who knows the possibilities of material—shows his ability. This twofold knowledge should be the standard to secure; yet by drawing a separating line the Board of Education helps to perpetuate that anomalous position of the designer who knows nothing of workmanship and the workman who knows nothing of design.

## SOME MODERN DOORWAYS.

**By F. HERBERT MANSFORD.**

*(Photographs by Joseph Mansell.)*

At the entrances to many houses in the west end of London wind-screens and other devices have been erected subsequent to their completion, often marring the elevations. At No. 17, Grosvenor Square is an example of a porch added to a house in such a way as to enhance rather than detract from the original design. There is nothing to betray the after-thought but the greater sharpness of the carving of the outer order and a closer impingement of the cornice against the window architrave than the eighteenth-century architect would have arranged for in the first instance. The extension of the balcony above the porch not only gives greater space but increases the function of the columns and unites the porch to the mansion most effectively.

At the Archbishop's House, Westminster, the late Mr. Bentley has given us a graceful porch of unusual outline, but it may be questioned whether the bringing forward of the balcony to the front, and thus loading the haunches of the arch (as in the previous example), would not have been an improvement.

The porch of No. 10, Palace Court, Bayswater, is by Messrs. Dunn and Watson, with whom was associated until his death the late Mr. J. Maclaren. There is a spaciousness of plan, an originality of design and a refinement of detail about this entrance which make it one of the pleasant little architectural surprises of its vicinity. Another porch close by affords an excellent example of depressed elliptical vaulting carefully carried out in rubbed brickwork with close joints.

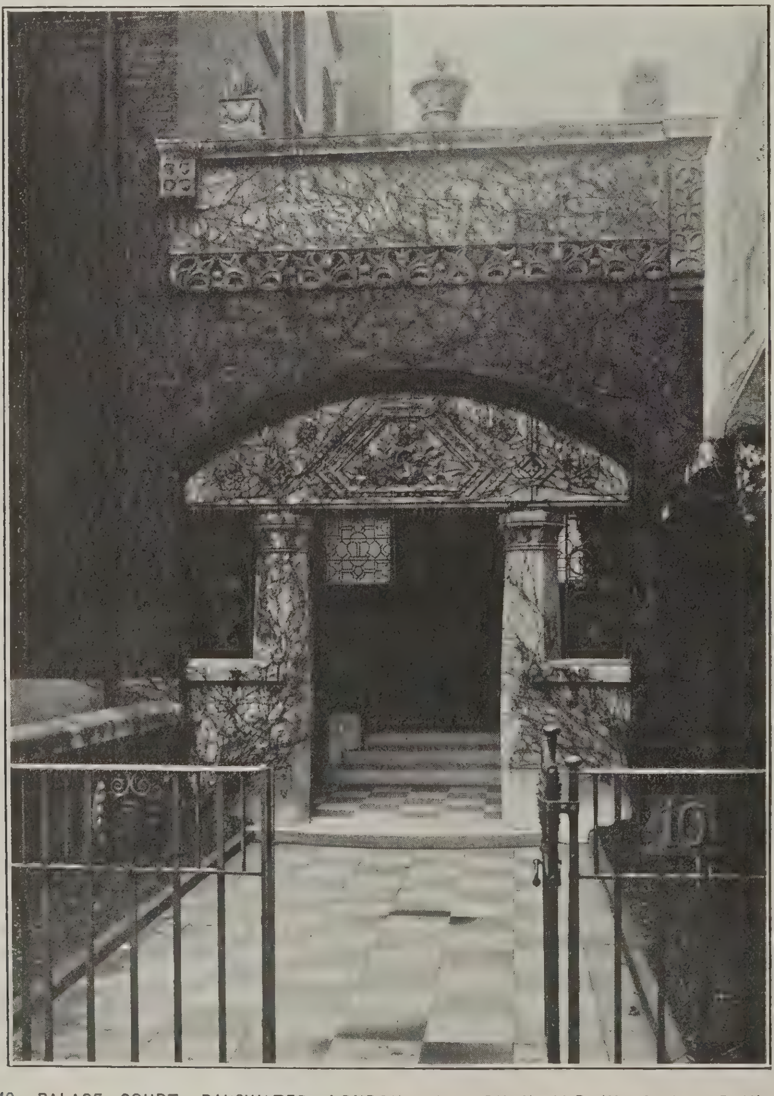
The south entrance to the Royal School of Art Needlework, by Mr. Fairfax B. Wade, is an interesting composition, but the absence of steps, however inevitable, must be considered a blemish (see p. 62). The rococo columns are unusual with us, but are by no means out of keeping with the elevations, some features of which bring Dresden to mind. The lion and unicorn preserve their equilibrium with difficulty owing to the niched excrescence above.

At the south end of Park Lane the entrance to a block of flats (illustrated on p. 62) is mainly notable for the beauty of the purple marble employed. The bays above were not originally intended, and the doorway suffers from the too frequent in-and-outness of the façade.

The eastern entrance to Lloyd's Registry, illustrated on p. 60, shows a type of doorway which Mr. Collcutt has frequently employed, a doorway with an arched hood supported upon consoles. In this instance the position of the consoles against the columns is perhaps unfavourable to the complete success of the treatment.

The porch of No. 37, Harley Street (corner of Queen Anne Street), W., affords an interesting example of Professor Beresford Pite's manner (see p. 60). The shallowness of the pediment, the breaking forward of the architrave and frieze above the columns, the omission of volutes beneath hollowed abaci, the prolongation downwards of the pateræ, the absence of neckings and the treatment of the bases, are all characteristic of the architect's masterly freedom with traditional features, a freedom surely justified by the result achieved.

The doorway of the London School of Medicine for Women (p. 61) affords a striking contrast by its orthodoxy; Mr. Brydon's work satisfies the eye by its scholarly dignity and proportion, but only the inscription reminds us we are no longer in the eighteenth century.



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## UNIVERSITY COLLEGE, LONDON.

### New Day School of Architecture.

**By Prof. F. M. SIMPSON, F.R.I.B.A.**

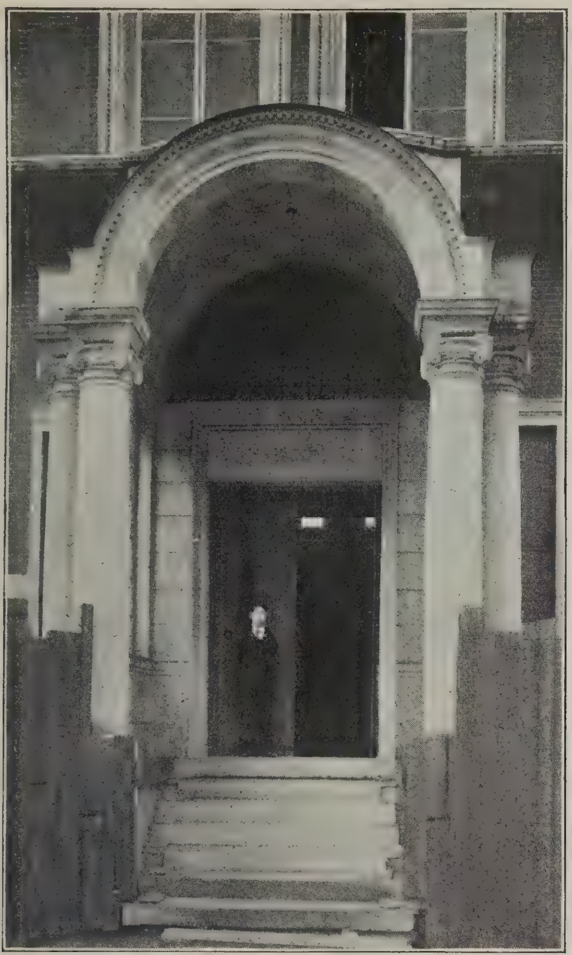
Systematic day courses for architectural students will be started at University College, London, in October. Students who have already had some experience can join any of the lectures or classes by the year or by the term, but the principal course extends over three years, and at the end of it the college certificate can be obtained. This course is intended primarily for students who wish to become architects, and should be taken by them before they enter an architect's office. The need for such a preliminary training cannot be insisted upon too strongly, although it will still be necessary for students who have taken the course to spend some time in an office before commencing practice. A pupil who goes straight from school into an office generally wastes the greater part of his first year or two, because much of the work he is set to do is unintelligible to him. Even what he does understand he picks up in a disjointed manner, and often remains in ignorance of the most elementary facts.

The advantages of a preliminary course are briefly these:—(1) The training is systematic and continuous; (2) all details of construction, some of which in an office are often omitted because they are taken for granted by both architect and builder, are fully worked out and explained; (3) the student has to think for himself from the first, and not merely to interpret the thought of others, and yet he receives far more personal supervision than can ever be given by a busy architect in practice; (4) the saving of time is considerable, as none is wasted over drawings and tracings which the student does not understand; (5) it tests his fitness for the work and weeds out the unfit. No articles are signed which bind him to a term of pupilage. At the end of the first year he is free to go or to remain.

The advantages to the architect are as great as to the student. It is true that with a pupil thus trained he receives a smaller premium, and that the term of pupilage is shortened, but instead of a raw youth to whom the most elementary detail has to be explained, he has a trained student who from the first should be of some assistance.

The architectural course at University College is framed, in the first place, to provide a systematic training in the practical and æsthetic sides of architecture and in subjects closely allied to it; and, in the second, to encourage students to continue their general education, and so bring them into touch with other students in other departments who are pursuing different courses of study. The college already possesses in its Slade School of Fine Arts, its large engineering laboratories and its comprehensive arts and sciences classes valuable aids to a School of Architecture. Advantage will be taken of these, so far as is possible having regard to the limited time at the student's disposal, so that the course shall not be entirely on technical lines but on liberal lines also.

To further this, stress is laid on the necessity for a thorough grounding in the history of architectural development. The planning,



PORCH, ARCHBISHOP'S HOUSE, WESTMINSTER.
THE LATE J. F. BENTLEY, ARCHITECT.

construction and general principles of the masterpieces of ancient and modern times will be explained. The aim of the lecturer on architectural history will not be to cram a student's brain with names, dates and dimensions, but to enlarge his mind, stimulate his imagination, and interest him in his art.

A special course in steel and iron construction, and in the testing of materials, will be provided for architectural students by the professor of mechanical engineering.

**The Three Years' Certificate Course.**

The college certificate will be granted to students who have passed the special matriculation examination or some other examination (such as the London University matriculation) accepted in lieu of it, who have presented certificates of attendance in three of the subjects mentioned under "first year," and have satisfactorily passed through the full architectural course.

Students who have taken their B.A. degree at any University are exempted from the matriculation examination and from the general subjects in the first year, and can obtain the college certificate at the end of two years, instead of three.

The composition fees payable are forty-five guineas for the first and thirty-five guineas for each of the two following years. These admit to all the lectures and classes of the course.

The Donaldson silver medals are awarded to the two most successful students at the end of the course.

**Matriculation Examination Regulations.**

1. The examinations for this certificate are held twice each year, beginning on the second Tuesday in May and the fourth Tuesday in September.

2. The fee payable is one guinea. Should a candidate fail he will be re-admitted on payment of half a guinea.

3. Candidates must give notice of their intention to enter for the examination not later than fourteen days before the date of the commencement of the examination.

4. The fee must be paid at the office of the college and an entry-form obtained by each candidate before he can be admitted to an examination.

5. Candidates must pass in—(*a*) English, one paper, three hours; (*b*) Mathematics, two papers of three hours each; and in two of the following subjects, one only of which may be a modern language, one paper of three hours in each subject; (*c*) and (*d*) Latin, Greek, French, German, Italian, Spanish (or another modern language may be accepted if two months' notice is given by the candidate); elementary physics, elementary chemistry, architectural and freehand drawing, elementary mechanics.

**Students not taking the Certificate Course.**

Students not wishing to go through the certificate course can take merely the architectural and drawing from the antique classes, devoting the whole of their time to these. *Fee*, 30 guineas for any one year or 12 guineas a term. Students can attend the history of architectural development lectures without joining a studio class. *Fee* for any one course, £5 5s. a year, £2 2s. a term. Students cannot attend the building construction lectures without joining a studio class.

*Fees* for any one course of lectures:—Building construction or history, and one day a week studio, £10 10s. a year, £4 4s. a term; and two days a week studio, £14 14s. a year, £5 15s. 6d. a term; and three days a week studio, £18 18s. a year, £7 7s. a term.

The session is divided into three terms as follows, all the dates being inclusive:—

*First term*, from Tuesday, October 6th, till Friday, December 18th.

*Second term*, from Tuesday, January 12th, till Friday, March 25th.

*Third term*, from Tuesday, April 19th, till Saturday, June 18th, for lectures. Class examinations will begin on Monday, June 20th. Class-lists and awards of prizes and of scholarships will be announced on or about Tuesday, July 5th, when the session ends.

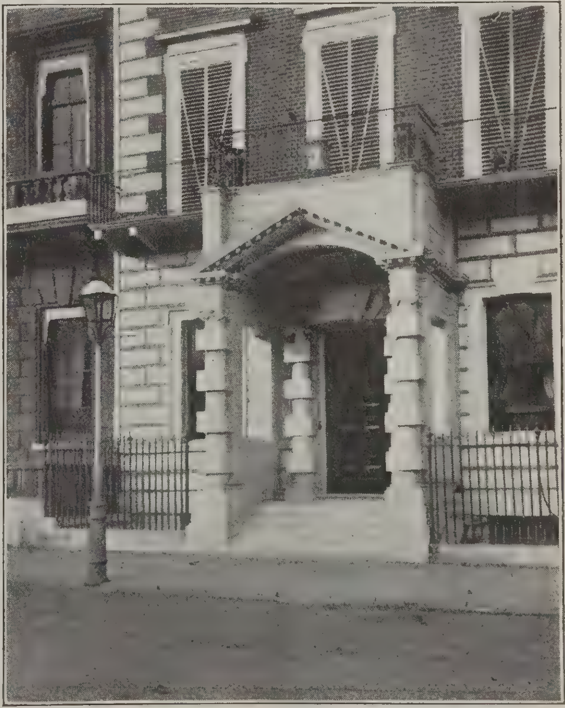
Christmas vacation from Saturday, December 19th, till Monday, January 11th. Easter vacation from Saturday, March 26th, till Monday, April 18th. Whit-Monday (May 23rd) is also a holiday.

The principal and Professor Simpson will attend from 10 a.m. to 1 p.m. on Monday, October 5th, and Tuesday, October 6th, for the purpose of giving advice and information to students entering the college. Intending students should communicate with Professor Simpson as early as possible. The matriculation examination, which students are strongly advised to pass before beginning the course, begins on Tuesday, September 22nd. Applications for admission must be made to the secretary on or before September 8th. A pamphlet giving details of the syllabus can be had on application.

## Views and Reviews.

### Practical Mathematics

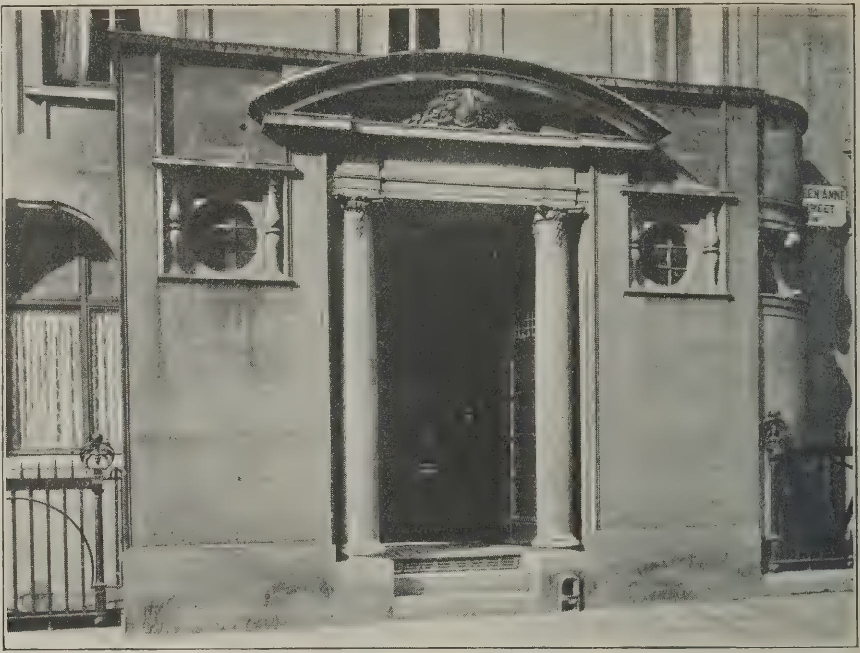
The author of this very useful book is the examiner in metal-plate work to the City and Guilds of London Institute, and principal of the Education Department of the Borough Polytechnic Institute. As Mr. William Garnett, D.C.L., secretary of the Technical Education Board of the London County Council, says in his introduction to the book: "It has been the universal experience of all who have been responsible for the technical training of artizans and apprentices that the chief hindrance to their work, and the principal cause of students becoming disheartened and ceasing to attend the classes after the first few meetings, has been the want of knowledge of the elementary principles of arithmetic in their application to mensuration and other workshop problems. The next difficulty has been a similar ignorance of the first principles of mechanics." This is not only so with artizans and apprentices, but applies almost as much to students of architecture and building construction—often those too who have been to good schools and should have acquired the knowledge. Most school teachers are incompetent to instruct students for after-life, having had no practical training themselves, and often, it must be admitted, not understanding the subjects they teach. Specialist teachers in technical schools have to waste much time in teaching elementary arithmetic, geometry and mensuration, with which the student should have come already prepared; and to such this book should be a great boon. It is written by a practical man who has been teaching



PORCH, NO. 17, GROSVENOR SQUARE, LONDON, W.

the subject to just such students as he knows, and has been careful to explain all the little points of difficulty which are met with by students—in fact, we have found few works so clearly written. The author does not teach the subjects of arithmetic, geometry and mensuration as three separate subjects (the usual system which has proved so faulty) but as one—in short, he teaches mensuration not as the outcome of mathematics but as an introduction to it. We are glad to see no questions are included throughout the volume, being relegated instead to a small chapter at the end—the usual practice is to overload the student with numerous examples that must be worked out by himself before he can understand the principles. Graphical methods are combined at every point with the arithmetical, and it is surprising how wide the range of instruction is in the limited space. The book should be in the hands of every student.

"Technical Arithmetic and Geometry. for use in Technical Institutes, Modern Schools and Workshops," by C. T. Millis. London: Methuen & Co., 36, Essex Street, W.C., price 3s. 6d.

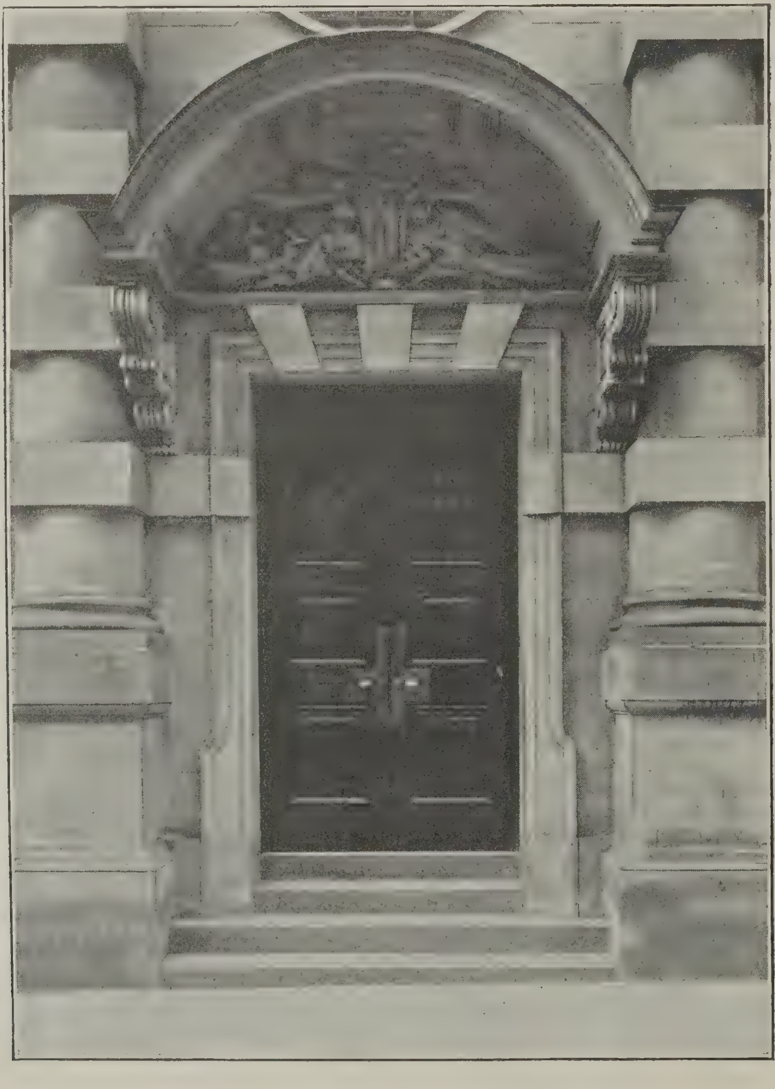


NO. 37, HARLEY STREET, LONDON, W. PROF. BERESFORD PITE ARCHITECT.

### Wallpapers.

This book deals with wallpapers and wall coverings from the practical decorator's point of view, and is illustrated by a very large number of blocks apparently taken from different makers' catalogues. Fashions and developments in wallpapers are discussed in a straightforward way; advice is given on the selection of papers for the various rooms of a house; the characteristics of English, French and American wallpapers are described, followed by some notes on the different varieties of wallpapers; after which come chapters on the practical work of the decorator, his tools, the methods of trimming, hanging and removing wallpapers, with particulars of miscellaneous decorations such as burlap, buckram, Lincrusta, Anaglypta, Lignomur, &c. The book is a production for the trade, and its illustrations furnish a very correct gauge of modern wallpaper design, which for years past has been steadily improving until now it may claim work that is equal to the hangings of any other era. The author observes that there was formerly a superabundance of designs brought out every year, entailing such expense to each manufacturer that profits dwindled away, a waste which has been considerably checked by the formation of the wallpaper "combine." Each of the firms amalgamated adhere, to a certain extent, to the class of designs they originally produced, and as nearly all the manufacturers are bound under the one head there is no difficulty in limiting the number of designs each season to a reasonable quantity.

"Wallpapers and Wall Coverings," by Arthur Seymour Jennings. London: The Trade Papers Publishing Co., Ltd., 365, Birkbeck Bank Chambers, High Holborn, W.C., price 7s. 6d nett.



EAST DOOR, LLOYD'S REGISTRY, FENCHURCH STREET, LONDON, E.C.
T. E. COLLCUTT, ARCHITECT.

## Obituary.

**Mr. William Joseph Adcock,** of the firm of Adcock & Sons, builders and contractors, of Walton, died recently at the age of fifty.

**Dr. W. H. Corfield,** Professor of Hygiene and Public Health at University College, London, died at Marstrand, Sweden, last week.

**Alderman John Hardaker, of Bradford,** died last week. Deceased was born in Bradford on February 10th, 1831, and became a partner with his father in the firm of William Hardaker & Son, builders and contractors. From that business he retired in 1882, when he was but fifty-one years of age.

**Mr. William Hunter,** builder, of Spilsby, died recently. Deceased, who was born in December, 1836, was the son of the late Mr. Thomas Houghton Hunter, a builder, &c., formerly of Halton Holegate, to which business he was apprenticed, afterwards managing the business of Mr. Thomas Loveley, builder, Branston, near Lincoln. He returned about 1865 to Spilsby, to join in business there with his father, who had removed from Halton Holegate to Spilsby, the firm being known as Hunter & Son, which it remains to this day.

## NON-FLAMMABLE WOOD.*

**By JOSEPH L. FERRELL.**

THE problem of wood protection, of converting it from a highly inflammable into an absolutely non-inflammable product, has floated before the minds of generations of men rather as a vague dreamy proposition than as subject-matter upon which to concentrate intense intellectual attention. Sporadic efforts void of practical utility are historically recorded at irregular epochs, from Roman days to the present time.

So little is known by the general public of the practical results achieved in protecting wood against fire that it is a tax upon credulity to ask the public to believe that the wood of a structure can simply, rapidly and cheaply be rendered as uninflammable as brick or stone. It is even likely that such a statement may be questioned here and now.

It is not claimed that wood cannot ultimately be disintegrated and destroyed by attacking flame, as we know brick, stone and steel may be; but it is claimed that wood may be so treated that, upon the withdrawal of such flame, it will not of itself, except perhaps momentarily, hold flame, whether in beam, board or splinter.

If the wood in a building will not inflame from fire attack, but only slowly disintegrate, as other uninflammable materials will from contact with fire, then the contents of the building alone can be destroyed by fire. Further, if the contents of a room inflame and the wood will not, then the fire can be localized, because the wood will not receive or transmit flame.

The elimination of the inflammable characteristic from wood is therefore a matter of vital consequence. And, further, such treatment as shall cause it to resist disintegration from fierce heat for the greatest length of time, without at any time inflaming, must be the most desirable.

The sum of values arrived at, as a resultant of all recorded study, inventions and scientific deduction, up to the beginning of the present decade, in regard to the treatment of wood, may be stated as follows:—

1. That wood is susceptible of absorbing varied percentages of liquids.
2. That certain chemical solutions when injected into the cellular structure of wood and afterwards dried leave a residual deposit of dry chemical therein, from which, with water, the solution was originally formed
3. That such impregnation may be effected by pressure mechanically applied and by incidental processes.
4. That such deposit of chemical substance in the wood-cells has in one case a preservative and in another a fire-resistant effect.

Under the modern system the wood is simply taken as it comes from the source of supply and put in a cylinder, which is then run full of saturating liquor; pressure is applied, the liquor is returned to the tanks, the lumber is run into a dry kiln, and another charge of lumber is put into the cylinder.

For white pine the normal saturating pressure is 300lbs.; yellow pine, 350lbs.; ash, 400lbs.; chestnut, 400lbs.; beech, birch and maple, 450lbs.; oaks, 650lbs.

The method is identical whether the wood is saturated with preservative or fireproofing solution, with this exception: The growth of experience demonstrated that the criticism of engineers regarding the non-permanence of the preservative solution hitherto injected into ties, piles, beams, &c., was a just criticism. It would seep out, slowly perhaps, but inevitably, under varying atmospheric conditions.

For instance, several railroad companies having tie treating plants believe that chloride of zinc acts most effectually as a fungus-destroyer. Chloride of zinc is an expensive chemical. Therefore, to be able to use it for their purpose, and not make their product too costly, they use a very dilute solution. In its dilute form the residual protective matter left in the wood is so slight that successive rains and evaporations in a relatively short time exhaust the infused material—and wash it out.

The saturation of wood to make it fire-resistant differs in some respects from preservative treatment. Wood treated to make it fire-resistant is subjected to many stringent requirements not essential in the case of preservative. For instance, the saturation must be complete to the heart. The colour of the original wood must not be impaired. The strength of the fibre must be preserved. There must be no lingering of flame when the attacking flame is withdrawn. To effect this, the strength of solution must be as high as possible. This, of course, adds to the cost, and the density of solution requires greater pressure to infiltrate.

DOORWAY, HANDEL STREET LONDON, W.C. THE LATE JOHN BRYDON, ARCHITECT.

Sulphate of ammonia was formerly used. This chemical, superficially studied, seemed to be all that could be desired. Wood saturated with it certainly would not inflame. Shavings planed from it would carry no flame. The treated wood would discolour more or less, but the refusal to carry flame seemed so admirable a result that such a defect seemed trifling. Longer acquaintance, however, destroyed the illusion. Familiarity bred contempt. Sulphate of ammonia is a whited sepulchre. It discolours wood. It effloresces and loses its virtue. It is hygroscopic and destroys paint and varnish. It decays wood inevitably. Its resistant virtue is excellent while it lasts, but its endurance against attacking flame is brief. For instance, if we stand vertically a piece of untreated 1in. white pine before a horizontal Bunsen burner so that the blue-point impinges, the average resistance to penetration and disintegration is thirty-two minutes. Similarly exposed, the average resistance of a piece of 1in. white pine saturated with sulphate or phosphate of ammonia is sixty-three minutes, or an extension of life, due to the chemical, of thirty-one minutes.

Now, it is an admirable result to secure immunity from fire for thirty-one minutes, if no better result could be attained, and to know that woodwork will not spread flame when treated; but it is not commensurate with the cost, and is not much to be proud of. Universally understood, it would not be considered a valuable commercial result.

The effectiveness of ammonia salts to repel flame from a wood surface depends upon the rapid volatilization of the ammoniacal gas. The greater the applied heat the more rapid the exhaustion of the protective gas, and, when exhausted no residual inert substance remains to bar the advance of flame or progress of disintegration.

The gaseous emission chemicals were the only known materials used up to five years ago in any commercial fireproofing plant.

It became necessary to seek for practical materials operating on a reverse principle

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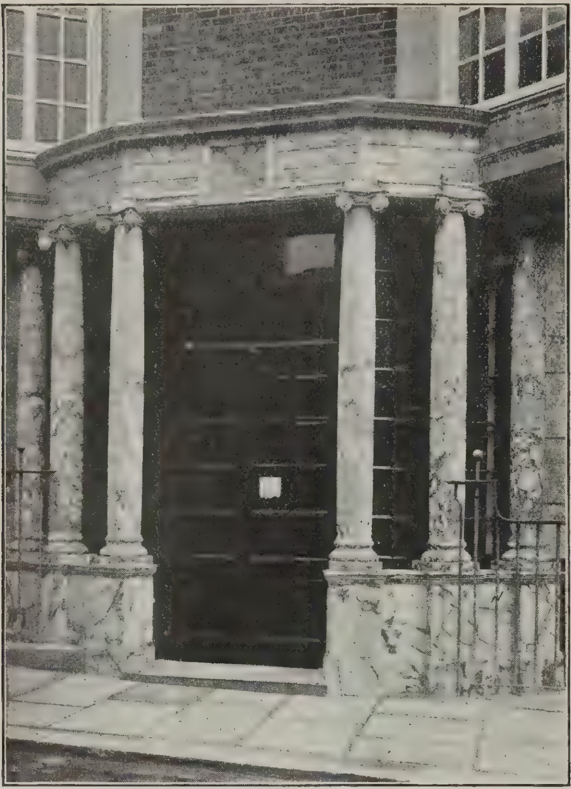
* Abstracts from a paper read before the Engineers' Club of Philadelphia.



DOORWAY TO FLATS, PARK LANE, LONDON, W.

from the gaseous emission, and after years of laborious effort sulphate of aluminium was discovered to be the substance endowed with the property of fire-resistance inconceivably beyond any former preparation. For instance, the best result from the gaseous emission substances was an added life over untreated wood of thirty-one minutes. Now the average of 2,800 pieces of 1in. white pine treated with sulphate of aluminium has an added life of seven hours and thirty-eight minutes, or over fourteen times that of wood treated with the gaseous emission chemicals.

This most satisfactory result comes from the simple fact that under flame sulphate of aluminium loses its water of crystallization, its sulphuric acid of combination, and remains then residual pure aluminium, which has the admirable property of expansion in the vacant cells of wood to two and one-half or three times its original volume of dry sulphate; and in doing so it interposes between flame and wood fibre a compact mass of pure alumina, infusible by the flame of any conflagration and an admirable non-conductor of heat.

It appears, therefore, that the fire-resistance achieved in saturated wood proceeds from the massing within it of an inert and infusible substance, which, from its non-conducting character, bars destructive heat and produces endurance of the mass and absolutely negation to flame for a prolonged period of time.

This, as the best result, seems to assure that the massing principle is the correct one; and it is further illustrated and confirmed by the extension of it in a wholly different application.

A casual remark was made more than two years ago by a prominent insurance man to the effect that the saturation of wood by sulphate of aluminium was assuredly a great gain to it in fire-resistant quality, but that he was quite as much interested in the preservation of existent structures from attack by fire as non-existent structures, or those only in contemplation; and he counselled the serious study of this phase of wood treatment. The proposition, in view of the small results accruing from the multitudinous so-called fireproof paints, was by no means an encouraging one; but the powerful results accomplished on the massing principle in the cellular structure of wood bodies indicated the direction to be a massing of a series of chemical solutions on the external faces.

A wholly new set of phenomena thus appeared for consideration:—

All paints known to the writer applied to the superficies of wood, on the application of heat break up sooner or later, scale off, or otherwise disappear. The attachment to the superficial cells of wood seems to be slight, and to effect a bond the penetrative effect of an initial application should be marked. A chemical substance was discovered possessed of extraordinary penetrative power, a simple application entering below the surface even of $\frac{1}{4}$in. oak. By subsequent coatings, other chemicals, making chemical union with the first, ensured adhesion and condensation, and an enamel, not a paint, grew upon the wood surface, possessing a fire-resistance over six times, on the average, that of wood treated by sulphate of ammonia solution diffused throughout the entire wood body. The problem involved the discovery of a transparent enamel for hard and fine woods in interior work. It compelled the discovery of means of application to woods covered with old paints and old varnish; the ability to absorb and receive on its surface lead or zinc paints when required; and it finally led to the discovery of means of incorporation of all shades of colouring in the massed enamel, so incorporated as to be proof against the wear of weather exposure, and by such incorporation to preserve indefinitely the original freshness and brightness of the colouring-matter.

It is not for a moment claimed that wood treated by these processes is absolutely impervious to fire, that such wood is irreducible by fire; but it is believed that by these processes and chemical solutions wood has gained a large immunity from attacking flame, and that in each instance it will only disintegrate after the flame has persisted for such a great length of time that ample opportunity will be given for extraneous aid to extinguish it.

In going over the ground of results accomplished in the more effective protection of wood from fire, the vital value seems to be that its treatment produces unquestionably non-inflammability. It then becomes a determined fact that wood thus treated, sustaining no flame itself, can communicate no flame; and attacking flame can endure only so long as its original fuel-supply remains unconsumed. Therefore, a fire originating in untreated contents of a structure will consume such untreated contents, and may blacken and roughen the surfaces of the structural wood, but can never excite any flame thereon if the fire-resistance resulting from treatment is efficacious, and must necessarily be limited to the radial distance of the flame.

DOORWAY TO ROYAL SCHOOL OF ART NEEDLEWORK, IMPERIAL INSTITUTE ROAD, LONDON, W.
FAIRFAX B. WADE, ARCHITECT.

# MODERN LONDON BUILDINGS.

(*Continued from* p. 38, *No.* 445.)

## S.E. DISTRICT: BUSINESS PREMISES.

| Building. | Architect. | Approximate Cost. | Remarks. |
|---|---|---|---|
| **1875.** | | | |
| Barrow Brothers' Leather Warehouses, Weston Street, Southwark. | Elkington & Son | £<br>— | The frontage is 162ft. The facings are of malm brickwork and the dressings of white Suffolk bricks and Portland stone. |
| Bevington's Leather Warehouses, St. Thomas's Street, Southwark. | Henry Currey | — | The buildings cover an area of 7,000ft. super. They are of Fareham red bricks and yellow malms, with Portland-stone dressings. |
| **1876.** | | | |
| Warehouses for Hooper & Sons, Weston Street, Bermondsey. | Arthur Billing | — | Red bricks and Bath stone were used for the fronts. |
| Workshops for the Fire Brigade, Waterloo Road. | County Council's Architect. | 2,499 | |
| **1877.** | | | |
| Brewery Buildings for Gordon & Co., Peckham. | Frederick Meeson | — | The buildings comprise the brewery, with engine shed, cooperage, smithy, washing sheds for casks, &c.; also the brewer's house, cottage for watchman and stabling for thirty-six horses. The buildings are faced with red bricks, white bricks being used for recesses and Portland stone for the dressings. The clearing floor contains 5,500ft. super., the tun-room 2,500 ft. and the mash-tun building 1,500ft. |
| Buildings for Messrs. Cockrell at Purfleet Wharf, Earl Street, Blackfriars. | Alfred Bovill | — | The Earl Street frontage is 80ft. long and 54ft. high, with a depth of 300ft. The foundations go down 25ft., the footings being 6ft. thick and the foundation walls 2ft The frontage, of three storeys, is carried up with grey granite piers. The building generally is faced with red bricks with Portland-stone dressings. The ground floor contains shops, while a separate block at the back contains the stabling. |
| **1878.** | | | |
| Epps & Co.'s Cocoa Factory, Holland Street. | E. T. Hall | 60,000 | The frontage is 320ft. long and 72ft. high to the parapet. There is a clock tower carried up to 110ft. above ground level. The elevations are in gault brickwork, with red Suffolk brickwork and Bath-stone dressings. |
| South London Pantechnicon Buildings, Station Road, Camberwell. | - - - - | — | The buildings cover 13,000ft. super. They have a frontage to Station Road of 120ft. and a depth of 100ft. |
| London Leather Exchange Buildings, corner of Weston and Market Streets, Bermondsey. | George Elkington & Son | — | The Exchange, on the ground floor, is 46ft. by 40ft. by 14ft. high. The building also contains a luncheon bar, dining-rooms, smoking-room, &c., besides offices. It is faced with red bricks and Portland stone, and stands on a plinth of Haytor granite. |
| **1880.** | | | |
| Atlas Paper Co.'s Factory, Newington Causeway. | Chambers | 20,000 | This building is the Imperial Theatre reconstructed. It has a frontage of 40ft., in Portland stone and polished granite. |
| National Penny Bank and Artizans' Dwellings, Clerkenwell. | Henman & Harrison. | — | The ground and first floors form the premises of the bank, with three shops. The second, third, fourth and fifth floors are devoted to artizans' dwellings, the facings externally being of stock bricks with terra-cotta dressings and strings. The building has a frontage of 140ft. and a height of 70ft. |
| **1881.** | | | |
| Warehouse for Clermont & Donner, corner of St. Thomas's and Joiner Streets, Borough. | William Wimble | 10,000 | The warehouse covers an area of 3,300ft. and has a frontage of 132ft., in Portland stone with white Suffolk bricks. |
| Warehouse for G. R. Herron & Sons, Merchant Street and Thomas Street, Borough. | William Wimble | 6,000 | The front is of brown Portland stone and white Suffolk brickwork, with ground-floor piers of red Aberdeen granite The carving was executed by Mr. Sansom. |
| **1882.** | | | |
| Crowden & Garrods' Premises, corner of Southwark Street and Southwark Bridge Road. | J. Orange and W. C. Ancell. | — | The building is faced with red bricks, stone being used for the gables. |
| **1883.** | | | |
| English Land and Investment Co.'s Premises, 493, New Cross Road | A. H. Kersey | — | The elevation is treated in free Classic style, in brickwork and stone. The building comprises offices and board-rooms. |
| London and County Banking Co.'s Branch Bank, Newington Butts. | Glover & Slater | — | The frontage is 64ft. in length and 50ft. in height The ground-floor storey is in rusticated Portland stone, elaborately carved; the second and third floors are in white Suffolk brickwork with Portland-stone dressings. The banking room on the ground floor measures 60ft. by 27ft. |
| London and South-Western Banking Co.'s Branch Bank, High Street, Peckham. | Edmeston | 12,000 | The elevation is 60ft. high, but only 12ft. wide. It contains a corridor leading to the banking premises in the rear, which occupy an area of 2,400ft. super. The elevation is of Portland stone, with Shap granite pilasters and Corse Hill pilasters to upper floors. Over the banking room is a residence for the manager. There are strong-rooms in the basement. The carving was executed by Mr. Seale, of Walworth. |
| Offices and Dwelling-house for Roberts & Sons, Wine Merchants, Peckham Rye. | V. J. Grose | 1,500 | |
| **1884.** | | | |
| London and South-Western Bank, Camberwell Green. | J. & J S. Edmeston | 11,748 | The building has a return front to Wren Road, in rusticated Portland stone. In continuation of the bank building eastwards are four shops. The bank is faced with rusticated Portland stone to first floor, above which red bricks with Portland-stone dressings have been used. |
| **1885.** | | | |
| Business Premises, 199, 201 Lewisham High Road. | Romaine Walker & Tanner. | — | The premises have 80ft. frontages and are faced with red bricks and Bath stone. |
| **1887.** | | | |
| London and County Bank, Westow Hill, Norwood. | Horace Cheston | — | The bank has a 36ft. frontage, with a 31ft. return front. The ground floor and basement are used for banking purposes, the two floors above forming a residence for the manager. The ground floor is faced with red Mansfield stone and the other floors with red brick. |
| **1888.** | | | |
| Elephant and Castle Horse and Carriage Repository New Kent Road. | Inkpen & Stallard | — | The building has a frontage of 100ft. The ground floor is occupied by shops and offices. There is stabling provided for 100 horses in the rear of the building, with a carriage gallery over for 120 carriages. The elevation is in pressed white brickwork, red buff terra-cotta being used for dressings. |
| Warehouses, Stoney Street, Park Street, Southwark. | E. B. I'Anson and E. Haselhurst. | — | The building is faced up to first-floor level with vitrified and glazed bricks, relieved with stone bands. The upper portion is in facing bricks and Portland stone. |
| **1892.** | | | |
| Workshops for the Blind of Kent, London Street, Greenwich. | W. F. Harris | — | The front is of red bricks with Portland-stone dressings. The ground-floor windows are used as shop windows. |
| **1893.** | | | |
| The Imperial Bank, High Street, Peckham. | Edwin T. Hall | — | The site has a very small frontage, which was utilized for a large Renaissance porch surmounted by a stone dome. The entrance is flanked by columns of black Norwegian granite, the rest of the porch and the dressings to the remainder of the building being of Portland stone. The banking-room is a large apartment 50ft. long, divided into five bays by pilasters, from which spring elliptical principals with hammer-beams and carved pendants supporting a lantern light 14ft. wide. At the opposite end to the entrance is a large bas relief, and at the entrance end a carved frieze 125ft. long, all in brickwork, modelled and carved by Mr. Gilbert Seale. The floors are o polished oak. |
| **1894.** | | | |
| Shop for Mr. George Evans, 116, Lambeth Walk. | W. M. Brutton | — | |

## S.E. DISTRICT: BUSINESS PREMISES—*cont.*

| Building. | Architect. | Approximate Cost. | Remarks. |
|---|---|---|---|
| **1895.** | | | |
| Branch of the London and South-Western Banking Co., Rosebery Avenue, Clerkenwell. | Edward Gabriel | — | Externally the ground floor is of Portland stone, above which the walls are faced with red pressed bricks with Portland-stone dressings. The ground and basement floors are used for the purposes of the bank, whilst the floors above form the manager's residence. |
| **1896.** | | | |
| Chilling Rooms for the Foreign Cattle Market, Deptford. | Andrew Murray, City Surveyor. | — | The additional block of buildings, capable of chilling 1,200 sides of beef, measures 180ft. by 56ft. The walls are constructed of stock brickwork in two thicknesses, the outer being 14in. and the inner 4½in., with a 9in. cavity filled with charcoal. The doors are 9in. thick, being constructed of two ¾in. thicknesses of matchboarding on each side, with two thicknesses of Willesden paper between and the internal cavity filled with charcoal. The floors are constructed on the same principle. |
| Business Premises for Mr. E. R. Goodrich, 35 Old Kent Road. | Wigg, Oliver & Hudson. | — | The fronts are faced with red brick and Ancaster-stone dressings. There is a shop on the ground floor with warerooms over, the top floors being arranged as a residence for the manager. |
| "High Street Buildings" Business Premises, High Street, Sydenham. | Hennell & Son | — | The block consists of shops on the ground floor, with living accommodation over. |
| **1897.** | | | |
| Business Premises for Messrs. W. & F. Faulkner, Ltd., Blackfriars Road | R. J. Thomson | — | The building contains offices, packing department, stock-rooms, &c. Externally the materials used are red brick and Portland stone. The main factory is in the rear, with frontages to New Street and Warwick Street. |
| Grain silo for Mr. S. P. Mumford, Greenwich. | Aston Webb | — | The building contains twenty-three brick bins 9ft. square by 47ft. deep The total height of the building is 127ft. The whole is built in cement with chain bond in the walls; the river wall is faced with blue bricks, and the upper portion with stocks and red-brick dressings and ornament. |
| **1898.** | | | |
| Laundry Premises for Mr. Stephens, Southampton Street, Peckham. | Edward Crosse | — | |
| **1900.** | | | |
| Aspinall's Enamel Factory, New Cross (rebuilding). | Max Clarke | — | Parts of the old building have been incorporated in the new work, which has been brought somewhat into character with it. The floor construction is of steel and concrete. |
| Branch of the London and County Bank, corner of Camberwell Green and Camberwell New Road. | Alfred Williams | — | The building is of Ancaster stone, with bands of Belgian blue stone and red bricks. The entrance, which is at the angle, is surmounted by a small tower and dome. There is a suite of rooms for the manager on the upper floors. |

## S.E. DISTRICT: DOMESTIC BUILDINGS.

| Building. | Architect. | Approximate Cost. | Remarks. |
|---|---|---|---|
| **1875.** | | £ | |
| Peabody Buildings, Stamford Street, Blackfriars. | Darbishire | — | The area of the site is 2½ acres. There are fourteen blocks of buildings, to hold 352 families. The blocks comprise 144 apartments of three rooms, each at a weekly rent of 5s. 9d.; 96 apartments of two rooms, each at 4s. 6d; and 112 single apartments at 2s. 9d. and 3s. each. |
| **1876.** | | | |
| Mission House for St. Philip's Church, Avondale Square, Old Kent Road. | Richard Coe | — | The building is Gothic in style. It measures 180ft. by 30ft. |
| Model Buildings for the Fishmongers' Co., Paragon Row, Rodney Road, Walworth. | T. Chatfeild Clarke | 13,000 | The dwellings are constructed on the flat system, in stock brickwork with red-brick strings. They afford accommodation for seventy-nine families. |
| Presbytery, Camberwell | R. J. Adams | 1,300 | |
| St. Agnes's Vicarage, Kennington Park. | George Gilbert Scott. | — | The house is in the Early English style, to harmonize with the church. It is constructed of red brick, stone being used for dressings. |
| **1880.** | | | |
| Sisterhood House (in connection with the Church of St. John the Divine, Kennington), Wyndham Road, Camberwell. | F. W. Hunt | 10,000 | The house has a 60ft. frontage in red brickwork with Bath-stone dressings. It is 61ft. high to the central gable and 55ft. high to the top of smaller gables. It comprises five storeys, including the basement. A corridor leads from the house to a chapel, 38ft. by 18ft., with an aisle 7ft. wide. |
| **1883.** | | | |
| House of Retreat, Lloyd Square, Clerkenwell. | Ernest Newton | 7,500 | There are forty cells for the sisters, also kitchen and laundry accommodation in the basement. The home has its own chapel and infirmary attached. |
| **1884.** | | | |
| All Saints' Boys' Orphanage, Lewisham. | E. L. Swatman | — | The home is capable of accommodating 112 boys. |
| Industrial Dwellings, corner of Duke Street, Waterloo Road. | Borer & Dobbs | — | The dwellings consist of eight blocks, each six floors high, containing sets of from one to three rooms each. The accommodation is for 850 persons. There are approaches from Waterloo Road and Duke Street. The buildings generally are of stock brickwork, with red brick and Portland-cement dressings. |
| **1886.** | | | |
| Edward Alleyn's Charity Almshouses, Norwood. | C. U. McIntire | — | The almshouses are designed to accommodate ten persons. |
| Residence for Mr. W. C. Johnson, Westcombe Park, Blackheath. | Higgs & Rudkin | 10,000 | The house is built of red brick with red terra-cotta window dressings; tile-hanging and half-timber work are also employed. |
| **1887.** | | | |
| Gordon Dwellings, Pound Row, Church Street, Camberwell. | Ellis Marsland | 10,000 | The front is 100ft. in length and the depth 124ft. There is a detached tower 70ft high and four blocks with two towers. The buildings are five storeys high, and contain 125 rooms. The elevations are of ordinary stock bricks. |
| **1889.** | | | |
| Cottages for the Working Classes, Little Suffolk Street, Southwark. | E. Hoole | — | The ground-floor walling is of red brick, the upper floors being tile-hung or rough-cast. |
| Offices of the Southwark and Vauxhall Water Co., Southwark Bridge Road. | J. W. Restler, Engineer to the Company. | 11,166 | The façade is carried out in Portland stone and the internal fittings are of mahogany. The roof is left flat for the future addition of a fourth storey. |
| **1890.** | | | |
| Falkland Park, South Norwood. | H. A. Rawlins | — | This mansion is built of white bricks and Portland stone. |
| **1893.** | | | |
| Industrial Dwellings for the Fishmongers' Co., Brandon Street, Walworth. | T. Chatfeild Clarke | — | These dwellings have a frontage of 75ft. and are executed in stock brickwork with red-brick strings and mouldings. Each floor contains seven sets of rooms, two or three to the set. The buildings are of five storeys and give accommodation for thirty-five families. |
| **1896.** | | | |
| "The Gables," residence for Mr. C. F. Selby, Blackheath Park. | Aston Webb | — | The materials are Bracknell red bricks, pitched and tarred timber, and rough-cast on the first floor. The roof is covered with red tiles. |
| "Windermere," residence for Mr. E. Merritt, Blackheath Park. | Aston Webb | — | The materials used are red Bracknell bricks, rough-cast, wood cornices and red tiles. |
| **1897.** | | | |
| Rowton House, Newington Butts. | Harry B. Measures | — | Externally the elevations are of pressed Leicestershire brickwork, relieved with mingled gaults and buff terra-cotta. The floors, where not wood, are of cement and granite chippings, covered with wood blocks. The walls of all rooms in the basement are of ivory glazed brickwork, except bedrooms of females in catering department. Corridors on the ground floor are also in glazed brickwork. Two staircases, placed at the extreme ends of the cubicle floors, give access to the cubicles, which are 804 in number, arranged on six floors. The partitions of the cubicles are of framed woodwork. The building was erected by Rowton Houses Ltd., by their own staff of workmen. |

*(To be continued.)*

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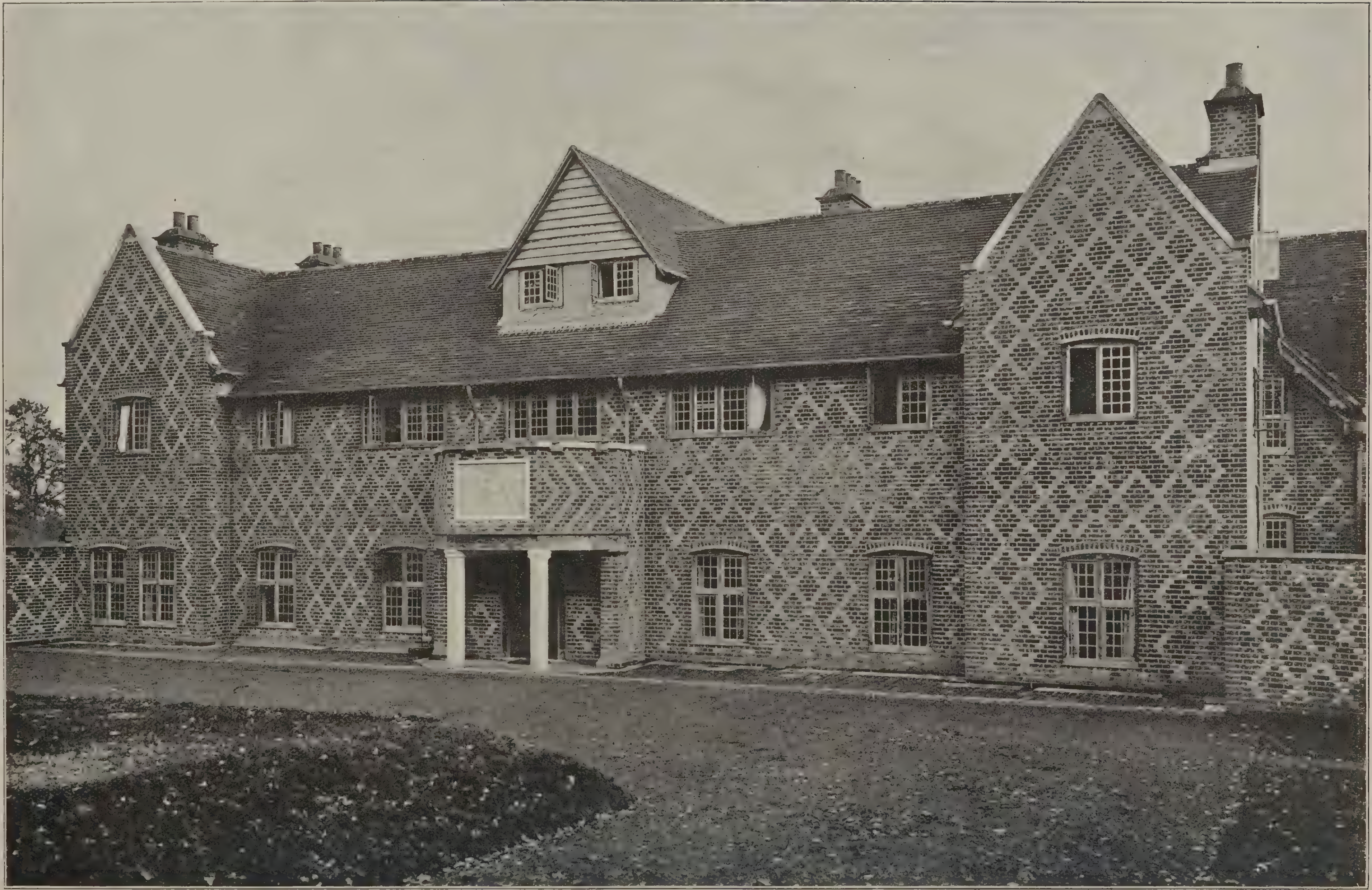
*Supplement to*
The Builders' Journal and Architectural Record,
*Wednesday, September 2nd,* 1903.



"Sandhouse," Witley, Surrey: Entrance Front (North). F. W. Troup, Architect.

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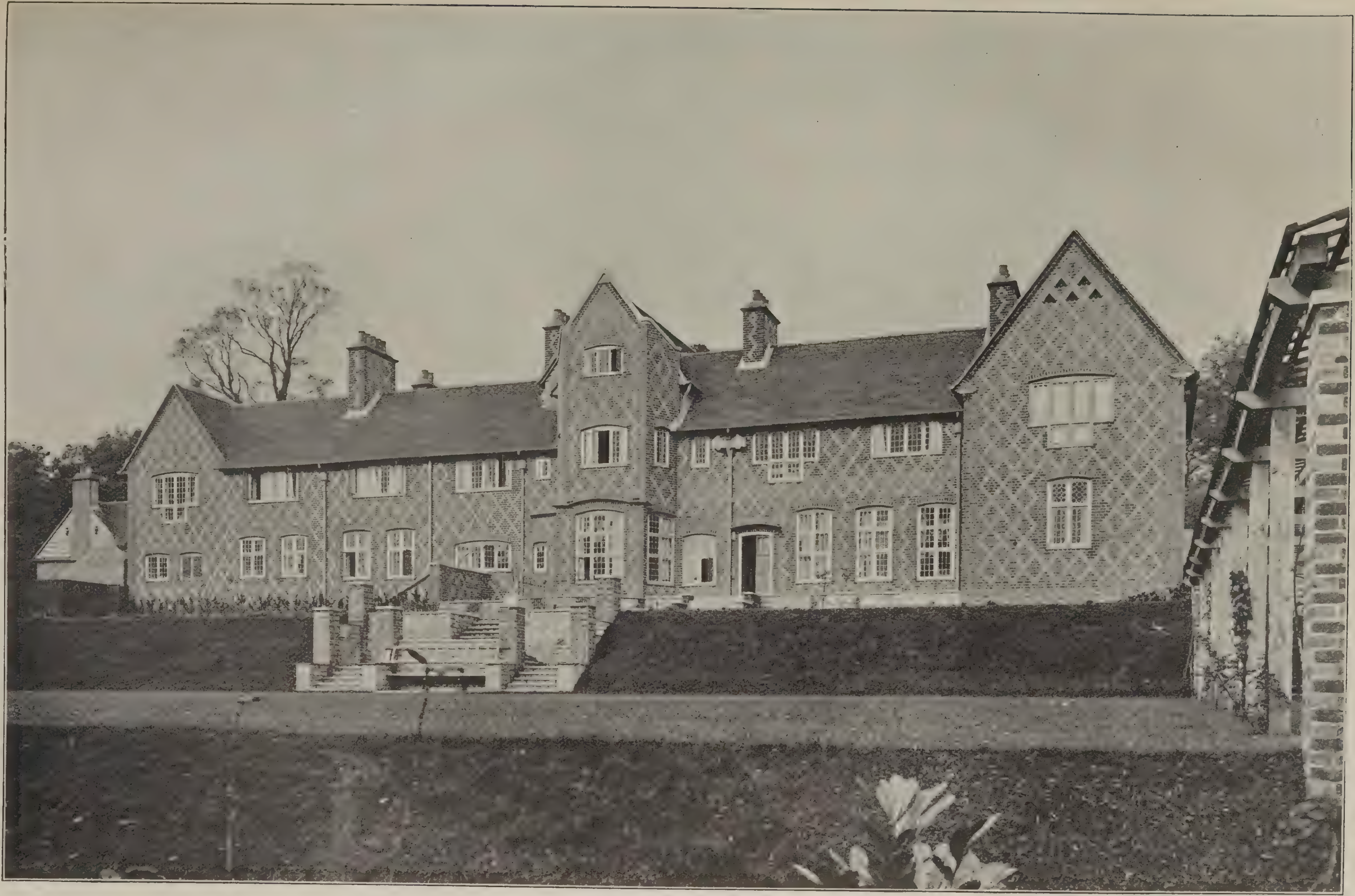

"Sandhouse," Witley, Surrey: Garden Front. F. W. Troup, Architect.

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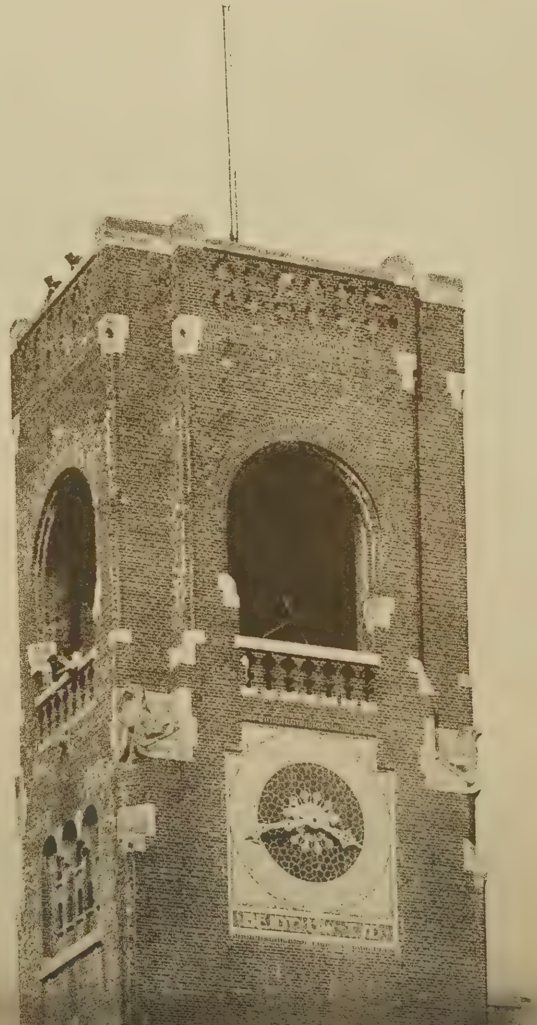

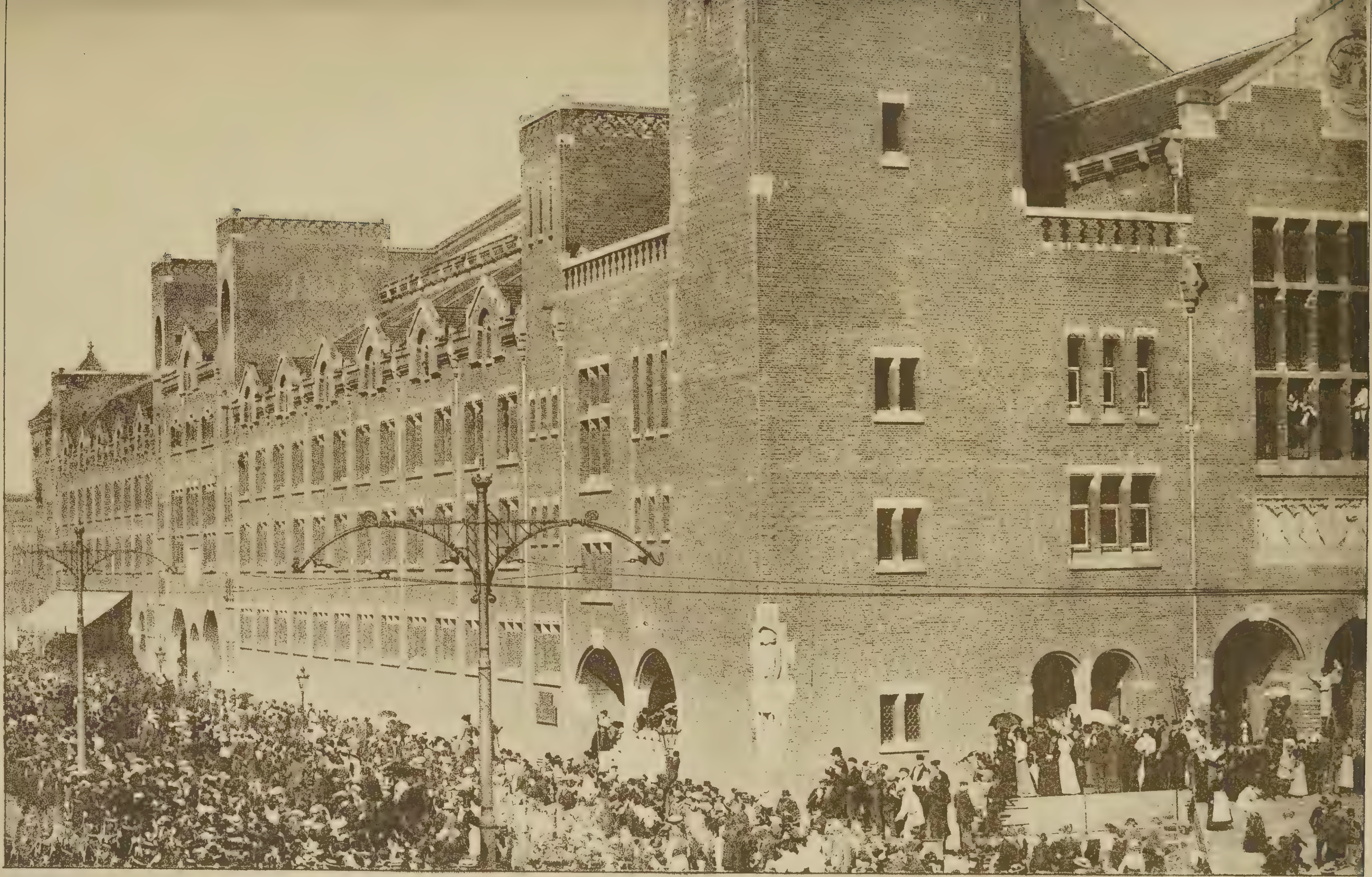

"INK-PHOTO." R. J. EVERETT & SONS, 58 LUDGATE HILL, E.C.

THE NEW BOURSE AT AMSTERDAM. H. P. BERLAGE, ARCHITECT.

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# CONTINENTAL NEWS AND OPINIONS.

[The following extracts have been translated for THE BUILDERS' JOURNAL from the German, Spanish and Russian press.]

### Architects' Diplomas in Germany.

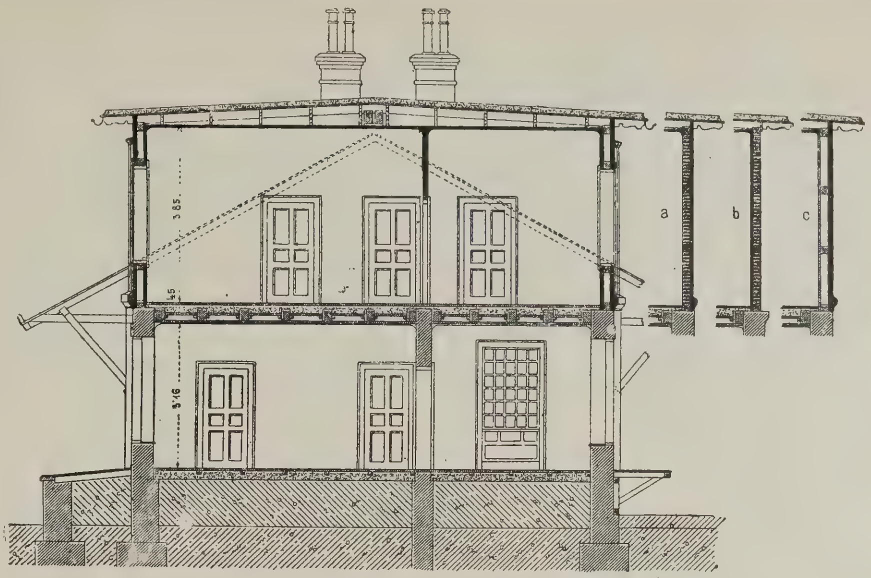
The "Praktische Maschinen-konstrukteur" gives particulars of the new requirements of the German Government for architects' diplomas in connection with the Imperial Technical High School of Berlin. The examination is to show that the students' education is fundamentally sound from artistic, scientific and technical points of view. The chief features will be (*a*) construction, (*b*) Classic and Renaissance architecture and (*c*) mediæval architecture. Applicants for examination must show evidence of geometrical knowledge, with specimens of perspective, &c.; statical knowledge, simple wood and stone working, freehand drawing, surveying, &c.; as general knowledge, the most important natural laws and features, the basis of inorganic chemistry, &c.; strains and stresses, determination of the strength of single beams, resistance of walls and vaults, bending moments; the elements of building, but not including iron construction. The principal examination requires designs for a building, sketches of stone, wood and iron construction, a building or part of a building in the classic, mediæval and Renaissance styles, to a large scale, detailed sketches showing acquaintance with different classes of buildings, ornament, coloured decorations and nature studies. Designs must be accompanied by a sworn declaration that they are the architect's own exclusive work.

### Workmen's Houses.

"Uhland's Technische Rundschau" has a special article on workmen's dwellings in which are discussed the various methods of meeting the action of the weather through the naturally thin walls where there is no great height, as is usually the case with workmen's houses. It recommends that the iron skeleton carry all the weight, and that the walls be filled in with waterproof and cold-proof material. For such purposes straw, clay, ash, burnt-sand or turf fibre might be used. The best material for the purpose—kieselgur—would probably be too expensive.

### Cork Slabs.

The cork slab so well known in cold-storage buildings as an insulator is the subject of an illustrated article in "Uhland's Technische Rundschau," accompanied with illustrations which are here reproduced to show the application of this material. The drawings show a house of two storeys with a masonry base, and the upper part formed with wooden walls containing corkstone, with a tarred felt roof. The principal combinations are shown at (*a*), (*b*), and (*c*) on the same illustration; (*a*) being a wall of brick faced with cork outside, (*b*) a similar wall lined inside with corkstone, and (*c*) a wall covered outside with cork slabs and inside with lath and plaster. With this material light walls not more than 7 to 9 cms. thick can be made simply and cheaply. The weight of corkstone pannelling 4 cms. thick with plaster-facing is about 45 kilos. per square metre; 5 cms. thick it is 50 kilos., and 6½ cms. 55 kilos. Taking the heat conductivity of a corkstone wall as value 1, that of 7 cms. would be 1·20, whilst that of a half-stone wall is 2·67 and hollow wooden walls 1·50. The method of constructing a wall with cork slabs is as follows:—The plaster surface of the walls against which the cork composition is to be placed is removed to the extent of the thickness of the cork brick. The latter is then covered below and on the edges with gypsum mortar, and placed on edge. The bricks are next bound together by pins till the mortar is set. The thickness is usually 5 cms. for walls 3½ metres high; higher walls naturally require greater thickness of cork, and it is also desirable to strengthen them with thick flat iron bands, the width of the bricks, at intervals of about 3 metres. These bands have a corner at each end, and are screwed to the floor and ceiling. The manner of fitting the doors is shown by the details on the next page; also how the walls are set in supports in the ground. Cork slabs are also very useful for flooring.



CORK SLAB CONSTRUCTION.

### German Street Aspects.

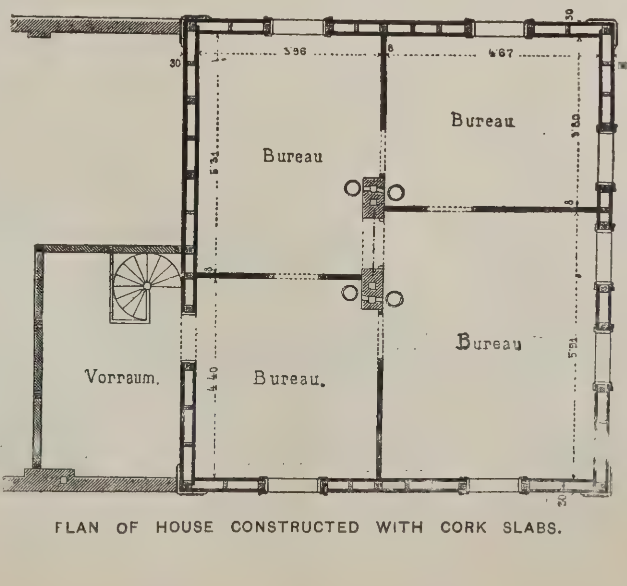
Hans Schliepmann on street pictures, writing in the "Berliner Architecturwelt" of the well-known Leipzigerstrasse, Berlin, says of the south side between Friedrich and Mauer Streets: "A variegated architecture flourishes here, a gathering of ideals and idealettes, an aggregated nervous unrest. There is such a frequency and variety of bays, projections and gables that the question of grouping is never suggested. Like flickering torches, the lines of the houses rise and fall. In the midst the bays produce a firm idea of high order; their strong upright lines effectively distribute and modify the numberless horizontal lines. Thus there is rendered a sparkling, fantastical, even orgie-like, but withal strong esthetic, original and simple impression. The effect must not be considered as from the ground floor for, thanks to the call for exaggerated advertising by our commercial people, the architectural features of our houses always begin after the first floor, over a chaos of boxes, large and small, signs, flags, gigantic glaring mirrors, &c."

### New Door to Metz Cathedral.

The new door on the western side of Metz Cathedral, which was opened a few months ago in the presence of the Kaiser and Kaiserin, is in the Gothic style after designs by the cathedral architect Tornow. It is richly decorated with sculpture. The cathedral, which is a union of two churches, had not a large door at this point, as the neighbouring Bishopscastle did not leave room for it. When in the first half of the eighteenth century the building on the western side was pulled down a free space was left, which suggested the idea of having a principal entrance there: and when in the year 1744 King Ludwig XV. was taken seriously ill during a temporary residence in Metz, recovering, however, after a long illness, the cathedral chapter decided to erect a principal doorway in remembrance of the event. This was carried out by le Brun after the plans of Blondel during the years 1761-4 and was added to the surrounding buildings south of the cathedral. This portal has now been replaced by the new door.

### Prison and Penance for Architects.

Two Russian architects, Sograph and Nerosloff, have recently been summoned for entrusting architectural superintendence to an unqualified junior, under whose care a house that was being heightened collapsed, injuring one man and killing another. Expert evidence showed that during the work there was no proper superintendence. The disaster was due to the failure of the supports of the roof, which was itself weak, being a constant menace to those who lived under it. The court, after hearing the unsatisfactory reasons why the young man was retained, sentenced Sograph to two months' arrest and penance and Nerosloff to two months in a prison and penance.



FLAN OF HOUSE CONSTRUCTED WITH CORK SLABS.

### Houses in St. Petersburg.

The technical committee of the St. Petersburg town council having considered the question of beautifying of the façades of the city houses, has recommended the French method of lightening the taxes on suitable houses and rewarding the architects. A scheme of premiums is being worked out, to be called after Peter the Great in celebration of the 200th anniversary of the city's foundation.—Following the example of the Berlin Architectural Society, says the "Novoe Vremya," the Petersburg Society of Architects is agitating against the harm resulting from many-storeyed buildings. Careful statistical results gathered by the Berlin Society show that the highest death-rate occurs amongst the inhabitants of the upper storeys, particularly amongst children. The lower storeys, strangely enough, only occupy the second position in the list. Similar statistical results are being gathered in St. Petersburg by the Architectural Society, and, at its request, will probably be taken account of in the preparation of the new building regulations.—The Russian Minister of the Interior has informed the St. Petersburg council that he has decided the question of balconies as follows: On façades, projections may be let into the fronts of houses in the form of open or closed balconies, caryatides, statues, &c., provided they are not lower than 4 archin (about 8ft.) from the pavement; the area of the balcony shall not be greater than a twentieth of the whole façade and the depth shall not exceed 4ft.; the depth of closed balconies not to exceed one-twentieth the width of the street.

### Dresden Municipal Exhibition.

The Berlin "Tagliche Rundschau" has a long notice on the German towns' exhibition held in Dresden this year. In its criticism of the architectural section it says, *inter alia*, that the latest architecture in the largest towns, particularly the town halls, has generally followed the Renaissance, and as the German Renaissance is artistically and nationally an expression of the spirit of the German people the proper path has been followed. It thinks, however, that there is still too little personal, fresh, inventive and living force. The writer finds that most of the school buildings are more or less organized boxes, having the appearance of common square houses. Of theatres he says a large collection of models of German municipal theatres are shown. Theatre-building is one of the most difficult tasks of the modern architect, because he is not in a position to copy any models of olden times. Most architects are content to make the façade after some classical style, and to let the wings be simple enclosures. The municipal theatre of Nurnberg is an exception; for whilst it contains much that is beautiful and much that is plain, the wings are relieved by fine pilasters with small windows set in above and between the lines of the pillars.

### Portable Wooden Houses.

In a special article on house building "Uhland's Technische Rundschau" describes the Brummer system of portable wooden houses, of which many specimens were used for restaurants, &c., in the Dusseldorf Exhibition. The principle adopted consists in making panels 1 metre wide and 3 or 4 metres long, as desired, out of dry impregnated wood, with an air space as insulator. The panels are fixed together by swallow-tailed edging or dove-tailing. The pitch-pine sleeper frames and the roof frame are in parts and must be fixed wind- and water-tight. The roof panels are delivered all ready prepared with roofing felt. The parts can be adapted to a great variety of houses without skill, and the inner parts, doors and windows can be changed without interfering with the structure. The post-office building, chief restaurant, offices, cold-storage room, with slaughter-house and engine-room, and quite a series of other buildings, were so constructed in the exhibition.

## Builders' Notes.

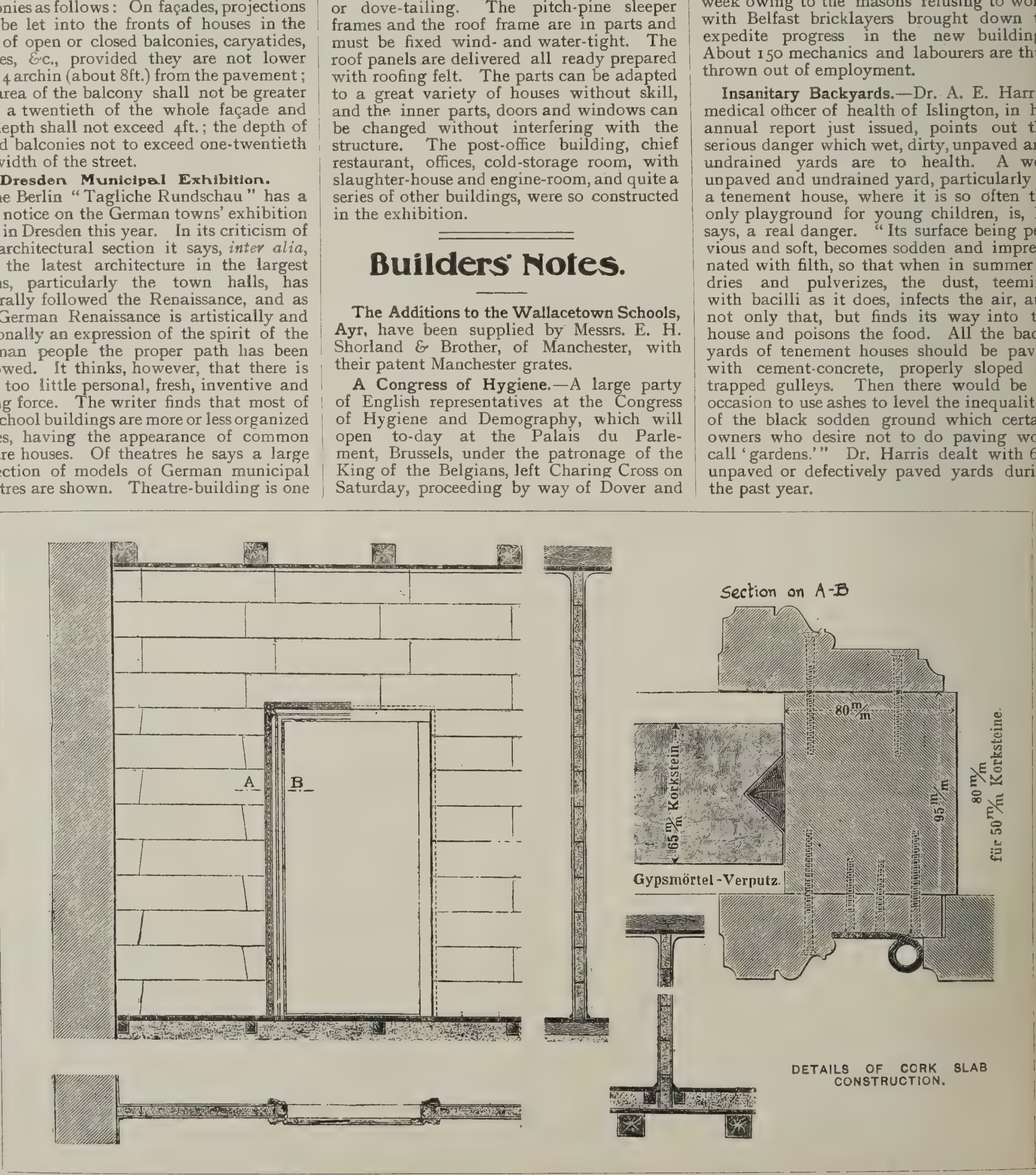
**The Additions to the Wallacetown Schools,** Ayr, have been supplied by Messrs. E. H. Shorland & Brother, of Manchester, with their patent Manchester grates.

**A Congress of Hygiene.**—A large party of English representatives at the Congress of Hygiene and Demography, which will open to-day at the Palais du Parlement, Brussels, under the patronage of the King of the Belgians, left Charing Cross on Saturday, proceeding by way of Dover and Ostend to Antwerp for a round of official visits to the chief towns of Belgium; the tour including Antwerp and Malines, at which the members will be received by the burgomasters and communal authorities. The party consisted of more than seventy members of the Sanitary Inspectors' Association, headed by their president, Dr. Sir James Crichton Browne, who on arrival at Antwerp had an official reception by the burgomaster and town council at the Hotel de Ville.

**Johannesburg Building By-laws.** — The Transvaal Government Gazette for June 12th publishes the text of the by-laws adopted by the Johannesburg Town Council and approved by the Lieutenant-Governor, governing the construction and arrangement of building and laying-out of streets within the municipality of Johannesburg.

**An Irish Dispute.**—Building operations at the Limerick Post-Office were stopped last week owing to the masons refusing to work with Belfast bricklayers brought down to expedite progress in the new building. About 150 mechanics and labourers are thus thrown out of employment.

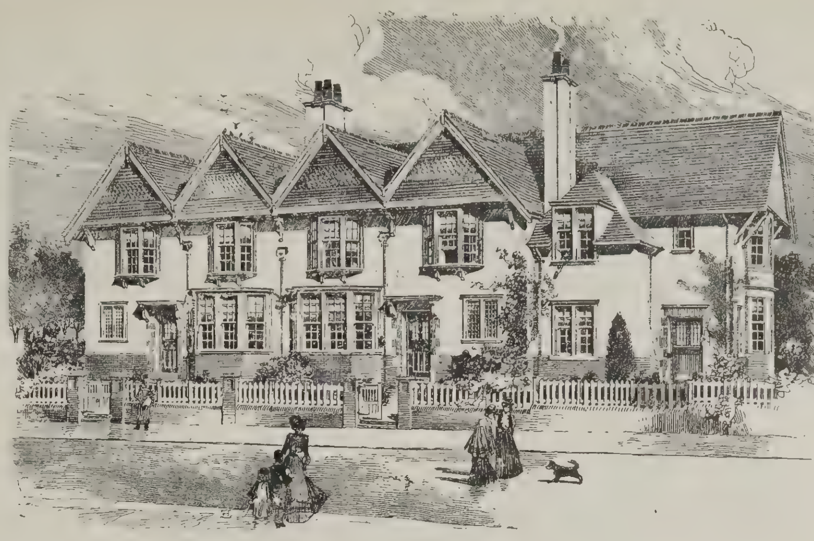
**Insanitary Backyards.**—Dr. A. E. Harris, medical officer of health of Islington, in his annual report just issued, points out the serious danger which wet, dirty, unpaved and undrained yards are to health. A wet, unpaved and undrained yard, particularly in a tenement house, where it is so often the only playground for young children, is, he says, a real danger. "Its surface being pervious and soft, becomes sodden and impregnated with filth, so that when in summer it dries and pulverizes, the dust, teeming with bacilli as it does, infects the air, and not only that, but finds its way into the house and poisons the food. All the backyards of tenement houses should be paved with cement-concrete, properly sloped to trapped gulleys. Then there would be no occasion to use ashes to level the inequalities of the black sodden ground which certain owners who desire not to do paving work call 'gardens.'" Dr. Harris dealt with 610 unpaved or defectively paved yards during the past year.



DETAILS OF CORK SLAB CONSTRUCTION.

## VICKERSTOWN.

SOON after the purchase of the Naval Construction Works at Barrow-in-Furness by Messrs. Vickers, Sons & Maxim, Ltd., in 1897, and incidental to the important extensions to the works carried out by the new owners, housing accommodation in Barrow became very scarce, and by 1898–9 it was practically impossible for any workman to come to the town and rent a house. About this time a syndicate was formed by certain local gentlemen for the purpose of acquiring land on Walney Island, and developing the west shore as a health and pleasure resort. In order to give a nucleus to their scheme they proposed to erect on the east side of the island about 1,000 workmen's houses and lease these houses to Messrs. Vickers. The syndicate, however, which had now assumed the name of the Isle of Walney Estates Co., Ltd., were surrounded by many difficulties in securing from the owners the land which they had provisionally purchased. Delay and recourse to law resulted, but in the meantime the want of houses for workmen in Barrow had become such a serious source of danger to the success of the town and its renowned shipyard that as a temporary resort Messrs. Vickers purchased the old Atlantic greyhound of the Guion Line, "Alaska," and for eighteen months about 250 men sought shelter in her commodious cabins. The hope of carrying out the original intention of the syndicate becoming more and more remote, Messrs. Vickers decided to take over the responsibilities of the Isle of Walney Estates Co. and build the houses themselves. They began in 1899. The town is now rapidly approaching completion, about 900 houses having been completed and occupied. A bowling green has been opened facing the Esplanade and there is a thriving institute and reading-room. A park, named after Mr. James Dunn, the managing director, has been elaborately laid out; a public hall has been erected, where the literary society, ambulance classes, orchestral society and other organizations meet for mutual improvement and entertainment; and a fire station has recently been built and equipped. The town throughout is lighted with electricity, both on the streets and within the houses. Perfect sanitation is obtained by the good fall given to the drains, by the elaborate traps and the provision of two air-tight septic tanks, where the sewage is self-treated and destroyed before it enters Walney Channel. The streets are wide and were constructed to the requirements of the Barrow Corporation, in whom they are now vested. Vickerstown claims to be one of the model towns of England. Its architect is Mr. W. Moss Settle, A.R.I.B.A., of Ulverston.

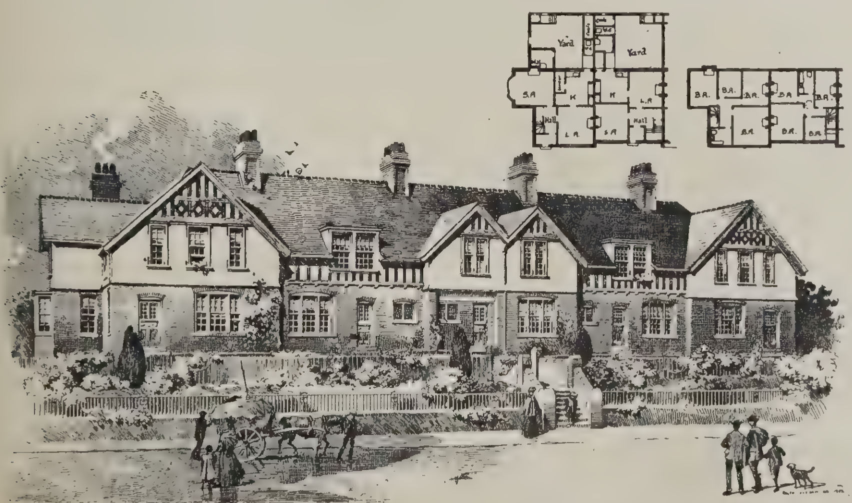


EMPRESS VILLAS, VICKERSTOWN. W. MOSS SETTLE, A.R.I.B.A., ARCHITECT.

The two illustrations here given serve to show the type of houses which being erected. The terrace of five houses on the Esplanade are a distinctive feature; they are built above the promenade level and can be seen for miles around. The Empress Villas face Walney Channel. They have a base of red Accrington bricks, with cream rough-cast above and red tiles on the roofs. The gables are carried out in oak, with large boards, hammer-beams and brackets, boarded soffit, filled in with plain and ornamental red-tile hanging. The gardens are enclosed by an oak fence.

The main street of the north town is Powerful Street, being 60ft. wide and a quarter of a mile long, running north to south; it was named after H.M.S. "Powerful," built at the Naval Construction Works, Barrow, and launched in 1895. Each house of the sixteen terraces in Powerful Street, varying slightly in elevation, comprises entrance lobby, sitting-room, kitchen, scullery and larder on the ground floor, with the usual out-offices, and three good bedrooms and bathroom upstairs.

Among the principal contractors who erected the houses were Messrs. W. Gradwell & Co., Ltd., Barrow; Walton Lee & Co., Barrow; Rainey Brothers, Vickerstown; James Cox, Barrow; Riley Brothers, Fleetwood; F. Salmon, Barnsley; Clark & Robinson, Barrow. In connection with the town a model farm has recently been started for supplying milk, butter, cream and eggs, and there are also large kitchen gardens for the supply of fresh vegetables. The rents of the houses vary from 5s. per week to 13s. per week, inclusive of rates, taxes and water.



THE ESPLANADE, VICKERSTOWN. W. MOSS SETTLE, A.R.I.B.A., ARCHITECT.

## Enquiries Answered.

*The services of a large staff of experts are at the disposal of readers who require information on architectural, constructional or legal matters. Questions should in all cases be addressed to the Editor. The querist's name and address must always be given, not necessarily for publication.*

### Cley Church, Norfolk.

LONDON, E.—S. J. writes: "Kindly give some particulars of Cley Church, Norfolk, particularly the western doorway."

Particulars of Cley Church were given on p. 67 of our issue for September 11th, 1901. The restoration was placed in Mr. Micklethwaite's hands.

### Our Articles on Building Construction.

CARDIFF.—E. C. M. W. writes: "Kindly state in what issues of THE BUILDERS' JOURNAL the valuable articles on building construction appeared. Would the stresses and strains as set forth in these articles be sufficiently comprehensive for the R.I.B.A. intermediate examination?"

Two series of articles on building construction have appeared in our columns. The first, consisting of fifteen articles, commenced with the issue for September 25th, 1901, and concluded with the issue for February 26th, 1902; the second, comprising nine articles, began on November 12th, 1902, and concluded on May 6th, 1903. Stresses and strains are dealt with quite fully enough for the R.I.B.A. intermediate examination.

### Buildings to Study at Ely.

BRIGHTON.—C. A. B. writes: "I am going to Ely for a holiday. Kindly state what buildings (besides the cathedral) are worth studying."

In Ely itself there is, besides the cathedral, the Conventual Church, the foundations of which were laid by Abbot Symeon (brother to Wakeln, Bishop of Winchester), who was succeeded by Abbot Richard in 1100; in 1106 the eastern part of the church was completed and part of the nave and transepts was erected, the work agreeing in character with early parts of Winchester. The nave was completed by the end of the twelfth century in the same style. There is also the parish church of the Holy Trinity, a very beautiful structure erected in 1363, on the north side of the Minster, and long supposed to have been the Lady Chapel. In Cambridge is Great St. Mary's Church, erected 1478–1519; the Templars' Church, which is Norman in style; Trinity Church, which is Perpendicular, as also are St. John's Church, Trinity College

Chapel and King's College Chapel, which, with its fan-vaulted roof, is, before all, worthy of study. These buildings are some of the best in Cambridge itself, many of the College buildings being of a very debased type of Gothic work. Besides these the churches of Bottisham, which is of the Decorated, and Burwell, which is of the Perpendicular period, are worthy of a visit. M.

### Alteration of District Drainage.

Stamford.—Red House writes: "About a year and a half ago I built a house. The drainage scheme was passed by the local council, the executed work approved, and a certificate given stating that the work was satisfactory and the house could be occupied. During the last three years new sanitary works have been carried out in the town, and I have now been served with a notice to the effect that my present drainage will have to be considerably altered and amended; also I am to prepare new plans showing proposed alterations, and if then approved by the newly-appointed surveyor the council will make the new connection. Can I legally be compelled to make the alterations, and if so, can the authorities be made to pay for it?"

You do not give any information in your enquiry concerning the system of drainage installed by you at your house or any particulars of the general drainage of the district. We should imagine from your statement that the sewage from your house runs into a cesspool, and that the Council, having installed a system of sewers in the district, require you to connect with the same. If the facts are as stated they can compel you to do this at your own expense, though they must bear the cost of the connection from your boundary to the public sewer.

### Altering a Roof.

Dennistown.—Mars writes: "Could the roof shown on the accompanying sketch (not reproduced) be altered and made like sketch No. 2?"

Yes, we see no objection to the course proposed.

### A Cheap Studio.

London, N.W.—Studio writes: "Which would be the best way to erect a studio in a country garden about thirty miles from London? It must be cheap. Would a building of wooden studs and braces, say 4in. by 3in., with feather-edge boarding to sides and roof and match-boarding inside, be satisfactory? Would it be sufficient if every other stud were let a foot or so into the ground and the earth well rammed, or must a concrete foundation be laid?"

The cheapest and most satisfactory form of building would be one of galvanized iron, match-boarded inside. If a building is fixed into the ground it becomes a fixture and may not be removed. The building can only be erected with the authority of the local council. We advise you to contract with one of the well-known firms of temporary building constructors, who will take all the trouble off your hands, get the building approved and probably cost you less in the long run.

### Plans of Asylum Hospitals and Higher-Grade Schools.

N.B.—Subscriber writes: "Kindly refer me to any architectural journal in which are reproduced plans, &c., of an asylum hospital for, say, 150 beds; also the plans, &c., of a higher-grade school for, say, 700 pupils: both of these to be modern."

We do not know of recently-published plans for an asylum so small as mentioned, but a plan of Tooting Bec Asylum, designed by Messrs. A. & C. Harston for the Metropolitan Asylums Board, which has been completed this year, was given on p. 636 of vol. lxxxiv. of the "Builder" for this year. The "Building News" for May 8th, 1903, contains on p. 647 an account and plans of the successful design for the Elwick Road higher-grade school for West Hartlepool as submitted in public competition by Mr. R. Holt, of Liverpool. The school is for 600 on each floor, and is worked in four departments of 300 each. There are also plans of church schools, for 350 children, by Mr. Gerald C. Horsley, on p. 197 of vol. lxxxiv. of the "Builder," mentioned above. Higher-grade elementary schools are dealt with in chapter xx. of Mr. Felix Clay's book on "Modern School Buildings," which is very fully illustrated with plans (25s.). A review of it appeared in The Builders' Journal for January 14th last. M.

## Correspondence.

### Gilbertfield Castle.

*To the Editor of* The Builders' Journal.

Edinburgh.

Sir,—In Mr. J. Jeffrey Waddell's excellent article in your issue for August 19th I notice he says that Gilbertfield Castle was built by Hamilton the poet. If he will read my account again (as I assume he has read it) he will see that Hamilton only resided in Gilbertfield. Being a friend and contemporary of Allan Ramsay, Hamilton could not possibly have built the castle, as Ramsay was not born till eighty years later than the engraved date of 1607. In the description of the Sheriffdome of Lanark (Maitland Club, 1831, p. 21) we are told that the lands of Gilbertfield were a part of the barony of Cambuslang, and were feued out by the Earls of Douglas before they disposed of the barony in 1452. The house is said to have been erected by Sir Robert Cunningham, of Gilbertfield, and the monogram shown by Mr. Waddell appears to be "R. C." with the letter H. probably for his wife, Dame Janet Hamilton. Again in the "Scottish Antiquary" (January, 1894, vol. viii., p. 138) we find that Sir Robert acquired Gilbertfield before 1594, and died there in 1628. He was captain of Dumbarton, under John, Lord Hamilton, from 1585-91.—Yours truly,

THOMAS ROSS.

### "Electricity for Small Hospitals."

*To the Editor of* The Builders' Journal.

Minehead.

Sir,—I have read with considerable interest the article on the above subject in your last issue, by Mr. W. Noble Twelvetrees. In speaking of oil engines, and also lighting by oil direct, he puts the price of the oil at 4d. per gallon. I should very much like to know what kind of oil this is, and where it is to be obtained, as it is very much cheaper than anything I have been able to get.—Yours truly,

J. H. LEATHER.

London, S.W.

Sir,—The following are the *wholesale* prices per gallon of petroleum and shale oils as stated in the "Mechanical World" Yearbook for 1903:—American Royal Daylight, 5d.; American ordinary, $3\frac{3}{4}$d.; American Water White, 5d.; American Tea Rose, $4\frac{1}{2}$d.; Russoline, $3\frac{1}{2}$d.; Russian Lustre, 4d.; Broxburn Lighthouse, $5\frac{1}{2}$d.; Storrar's Scotch gas oil, $2\frac{1}{2}$d.; Scotch intermediate shale oil, $2\frac{1}{2}$d.; light lubricating oil, $2\frac{1}{2}$d. Of course, market prices are variable, and it is not possible to obtain wholesale rates unless quantities are bought. In the case of a hospital, the usual course is for the authorities to make contracts for supplies, and firms tendering are always ready to give the most favourable rates possible. Mr. Leather may only be a private consumer, and, if so, he may find it difficult to buy at wholesale rates.—Yours truly,

W. NOBLE TWELVETREES.

## Keystones.

**A Chancel Screen,** designed by Messrs. J. P. Pritchett & Son, architects, is to be erected in the ancient church of Middleton Tyas, near Richmond, Yorks.

**A Statue of the Black Prince at Leeds** has been erected in City Square, and marks the completion of the scheme of improvement which was commenced in 1889 by the acquisition of the old Coloured Cloth Hall for £66,000. By the demolition of the purchased buildings, the present square was laid bare and so it remained for a long time—a waste of mud or dust, according to the weather.

**The Palace of Ulysses.**—Professor Dörpfeld, director of the German institute at Athens, is continuing his excavations in the island of Santa Maura, the ancient Leucadia, with the view of proving that that island, and not Ithaca, was the real home of Ulysses. The excavations are being conducted at the base of Mount Skaros (? Stavrotas), where the German archæologist is confident that the house of Ulysses was situated.

**R.I.B.A. Revised Form of Building Contracts.**—Copies may now be had of the Form of Agreement and Schedule of Conditions for Building Contracts issued by the R.I.B.A. in agreement with the Institute of Builders and the National Federation of Building Trade Employers of Great Britain and Ireland. There are two forms—one for use when quantities form part of the contract and the other when they do not. The copies are 1s. each.

**A Sunday School Competition.** — The selected designs submitted in a limited competition recently held for the Baptist Schools, Wellington Street, Luton, comprise a large hall with galleries around, fifteen classrooms, church parlour, infants' room, cloak-rooms, &c., and the usual conveniences. The whole of the rooms will be electrically ventilated. The estimated cost is about £4,600. The authors of the selected design are Messrs. George Baines, F.R.I.B.A., and R. Palmer Baines, 5, Clement's Inn, Strand, London, W.C.

**Fall from a Roof.**—A coroner's enquiry was held at Sheffield last week on the death of a painter, Arthur Charles Ward, aged 39 years, of Rotherham Street, Attercliffe. Deceased was at work on the slanting roof of an outhouse. To prevent himself from slipping, he used only a small board, this being entirely loose, and not supported in any way. Why he used such a small and unsupported contrivance is not known, there being plenty of proper appliances near at hand. The board slipped, and deceased, losing his support, fell through the skylight on to the paving below, and died as a result of his injuries.

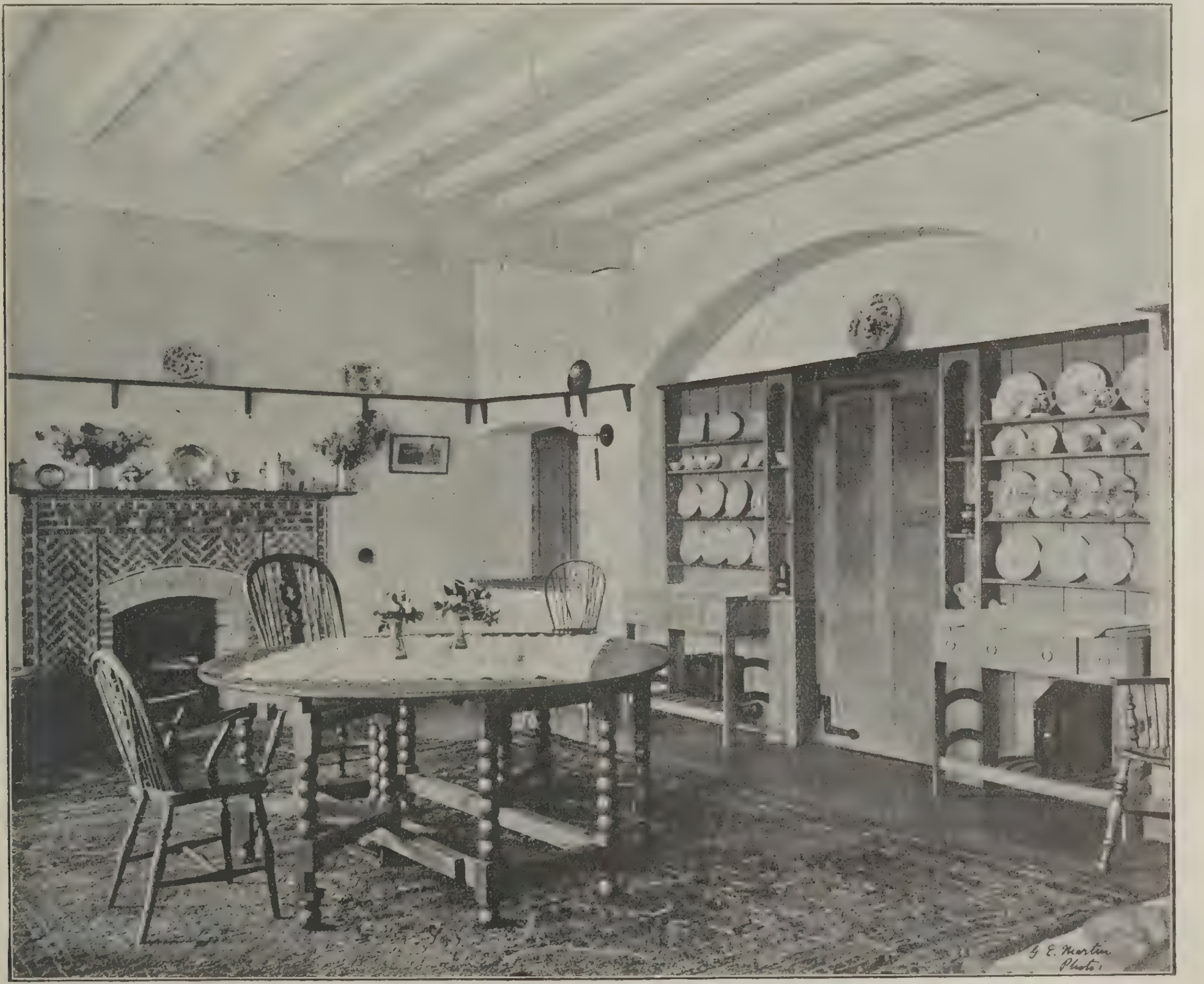
**Improvements at Euston.**—The Civil and Mechanical Engineers' Society paid a visit to the London and North-Western Railway Company's improvement works at Euston on Saturday last. The track is being enlarged from two main service lines into four, and a large carriage-cleaning shed at Euston is to be erected. The visitors, who were under the guidance of Mr. T. Bennett and Mr. F. D. Workman, watched the miners at work on their huge task of excavating 50,000 cub. yds. of soil. One of the company's engineers explained that they were tunnelling 40ft. under the main line to make a track to accommodate empty trains from Euston. This will shorten the run of every train by ten miles, as it obviates the necessity of sending "empties" to Willesden. The tunnelling was done by steam "navvies" and by hand, as the modern method of using the great boring-shield was impracticable at that place. In the course of the work, which will take two and a half years to complete, five or six streets have been demolished.

# Bricks and Mortar.

**Aphorism for the Week.**

*Our age suffers from one disadvantage which we cannot remedy: we come too late.*—
VIOLLET-LE-DUC.

**Our Plates.** THE new Bourse or exchange building at Amsterdam, the architect of which is H. P. Berlage, was opened a few months ago by Queen Wilhelmina. In declaring the building formally open it was noted that her Majesty said not a word about the artistic merits of the new structure, and from this it is inferred that she shares the unfavourable opinion on the subject which prevails among her loyal Amsterdammers. Even the friends of the architect have little to say in defence of the style of the building, except that it is a presentment of the art of the future—a sort of Wagnerism in architecture. We are glad, however, to be able to show our readers what is being done in the architectural world on the Continent. The illustration is from a photograph by Elfrinkhoff, of Amsterdam.—"Sandhouse," Witley, Surrey, is built of wood-burnt bricks, and thus most of the headers are vitreous flare-ends of a soft gray colour, which have been worked into a diaper over the whole house. The other bricks are red. All the woodwork is in oak. The somewhat unusual south larder has double windows and triple walls, and is supplemented by good cellars and a detached dairy with covered approach, thatched. Mr. F. W. Troup, of London, is the architect.


G E Martin Photo.

"SANDHOUSE," WITLEY, SURREY: THE DINING-ROOM. F. W. TROUP, ARCHITECT.

**St. Clement Danes.** THE fate of the church of St. Clement Danes in the Strand for a long time hung in the balance, but the stateliness of its design and the unique associations which cluster round it saved it from destruction in connection with the Holborn to Strand scheme. In 1680 the church was rebuilt at a cost of £8,000, the architect being Sir Christopher Wren, who most generously gave his services. Owing probably to the lack of funds, the church remained without a steeple for about forty years, when the design was entrusted to James Gibbs. The roof, groined and arched, is most lavishly embellished near the altar (which is of oak), and there is an abundance of rich carving. The pulpit, which is considered one of the finest of its kind, is of polished oak, also elaborately carved, and on each side of the aisles are massive Corinthian columns. One of the greatest attractions of the church is the pew in which the famous Dr. Johnson used to sit—in the front row of the gallery, close to the pulpit.

**The Plague of Letters.** A WRITER in the "Liberty Review" draws renewed attention to the literal disfigurement of London by giant letters fixed on the buildings. "The result is a species of architectural leprosy which is inexpressibly offensive. It is seen in what is, or should be, the most carefully-kept street in London—Parliament Street—where it assumes an exceptionally offensive form; it rages madly at the intersection of Tottenham Court Road and Oxford Street; and culminates at Ludgate Circus. The plague of letters is obliterating the architecture of London. It seems as if every man were afraid of being forgotten in the roaring race, and desired to advertise himself and his claims before the deluge. . . The rebuilding of London, now going on, should be carefully watched. The new Strand provides one of the greatest opportunities ever given to architects in England. What will they make of it, or, rather, what will they be allowed to make of it? Already we can see something of what it is to be, and one of its characteristics is revealed — immense height . . . . Nothing more intolerable than the Strand front of the Hotel Cecil has ever been seen in Europe. If this is to be the sort of thing, it would have been better to let the Strand severely alone . . ."

**Workmen and their own Houses.** A SCHEME of co-operative housing at Ealing was started two years ago, when a number of workmen formed themselves into "The Ealing Tenants, Limited." They secured a site upon which to build fifty-four houses in Woodfield Road, Ealing, and up to the present twenty-two are finished and in occupation, and others are in course of erection, while negotiations are now being conducted to secure more sites. The houses are erected by the workmen themselves, and are substantial structures of five rooms (not counting the kitchen), with good garden plots at front and rear. They are let at rentals of 13s. per week, and this enables the society to pay the interest on capital and provide for repairs and depreciation. Each tenant is required to hold five shares of the

"SANDHOUSE," WITLEY, SURREY: THE STAIRCASE.

capital (£50), which he can pay for by easy instalments, and any surplus profits are divided amongst the tenant members of the society in proportion to the rents they pay.

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**The British Association.** THE annual meeting of the British Association for the advancement of science, to be held at Southport from September 9th to 16th, under the presidency of Sir Norman Lockyer, promises to be of very considerable interest and utility to engineers and architects, judging from the papers announced to be read. The following are a few of the papers in the engineering section, which will be presided over by Mr. Charles Hawksley, P.P.I.C.E.:—Lieut.-Col. Crompton, R.E., on "The Problem of Modern Street Traffic," Mr. W. F. Goodrich on "Refuse Destructors and Power Production," Mr. C. H. Wingfield on "Permanent Set in cast-iron due to small stresses, and its bearing on the design of piston rings springs," Mr. C. A. Brereton on "The Rebuilding of Kew Bridge," Mr. J. W. Thomas on "Ventilation of Tube Railways," Mr. F. B. Behr on "The Manchester and Liverpool Express Railway," Mr. J. Parry on "The Water Supply of S.W. Lancashire," Mr. J. N. Scholbred on "Electric Traction," Mr. W. G. Popplewell on "Smoke Abatement," and "An Account of the Manchester Municipal School of Technology," the author of which is not stated. Excursions have been arranged for Saturday, September 12th, to the British Westinghouse Electrical and Manufacturing Co.'s works at Old Trafford, Manchester; the Municipal Technical School, Manchester; the John Rylands Library (of which Mr. Basil Champneys was the architect); and Chetham's Hospital at Manchester; Stoneyhurst College and Whalley Abbey; Ribchester and Hoghton Tower; Windermere; Chester; The Wirral Peninsula, Hoole, Bank Hall and Rufford Old Hall; and Ormskirk and Halsall Churches.

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**The Paris Building Regulations.** IN the second number of "Public Works"—a new monthly magazine, price 1s. —is an interesting article on the new building regulations of Paris, written by M. Paul Strauss, a member of the French Senate. These regulations, a revision of the statute of 1882, are largely due to the efforts of M. Louis Bonnier, a Government architect. It is decreed that projections in front of the building line shall be proportional to the width of the street; that they shall be enclosed by simple lines within which architects are at full liberty to work; that corbelling be subject to regulation; that no projections shall be lower than 10ft. above the footpath. A guiding principle adopted in the new law of August, 1902, is to proportion the elevation to the width of the street, so that in streets less than 39ft. wide the buildings must not exceed 19½ft. in height plus the legal width of the street; in streets more than 39ft. wide the height must not exceed 59ft. plus one-quarter the width of the street: the height in no case to exceed 65½ft. The radius of curvature of the roof is also regulated, though modifications have been introduced to allow builders more latitude. Courtyards from which inhabited rooms receive light and air must not be less than 323 sq. ft. in area; though this may be reduced to 160 sq. ft. if the living-rooms are only kitchens. The decree of 1884 limited the maximum number of storeys to seven, not counting the ground floor. This limitation disappears with the decree of 1902, but the minimum height of each storey is stipulated—no ground- or first-floor room to be less than 9¼ft. from floor to ceiling. Basement rooms and those above the first floor must not be less than 8½ft. high. Every attic must have at least 21½ sq. ft. of horizontal ceiling, and the height of chimneys is fixed at a minimum of 16in. above the highest part of the roof.

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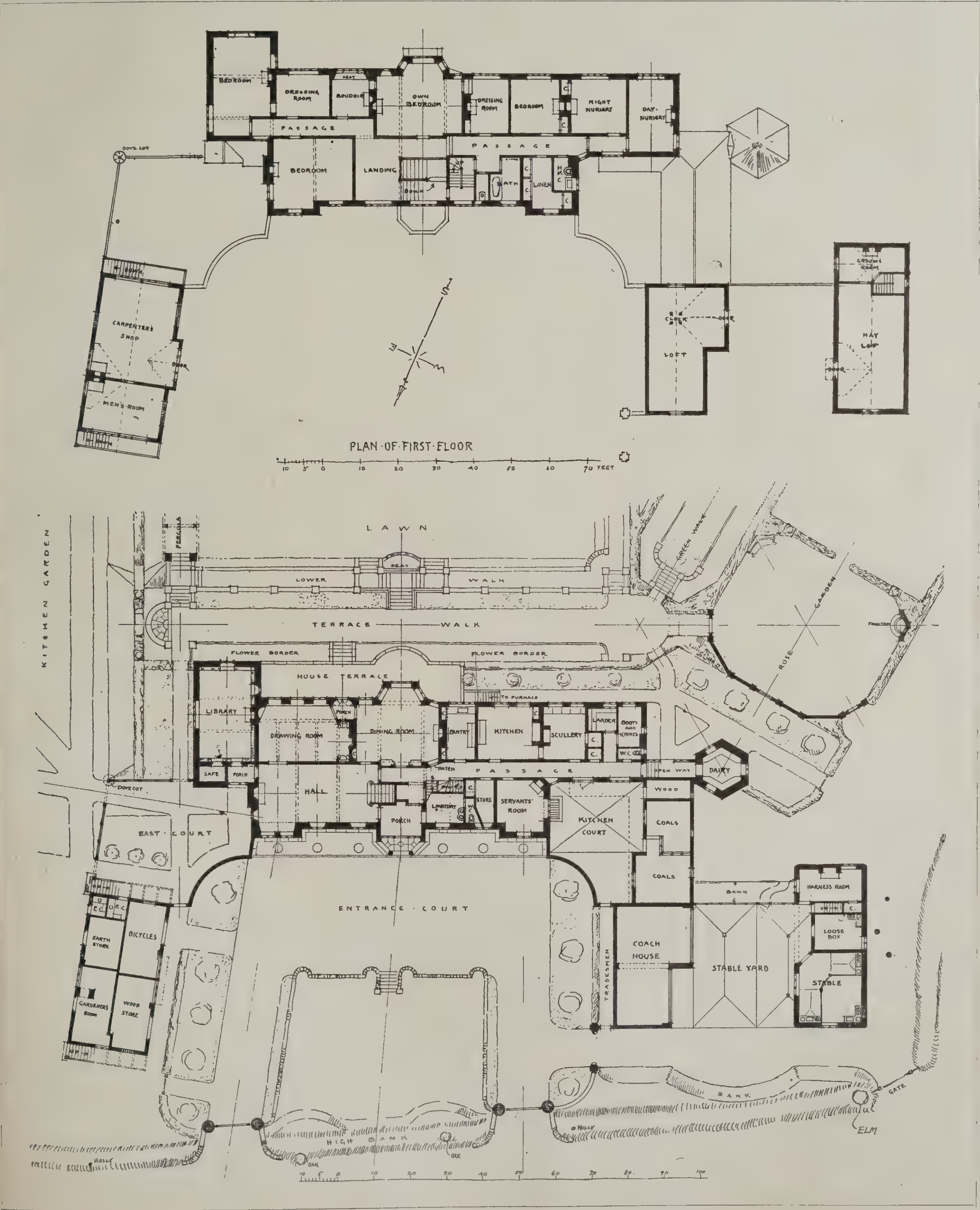
**The Trades' Training Schools.** THE report of the judges on the work done at the Trades' Training Schools of the Worshipful Companies of Carpenters, Joiners, Painter Stainers, Plaisterers, Tilers and Bricklayers, and Wheelwrights, at 153, Great Titchfield Street, W., has just been published, and forms very interesting reading. The report is illustrated by a number of photographic reproductions of work executed in the various classes, and these testify to the value of the training the schools afford. In his report Mr. H. Phillips Fletcher, F.R.I.B.A., director of the school, mentions several facts which go to prove the efficiency of the training. He mentions that one student who gained a silver medal four years ago in the joiners' class was employed at once as foreman over some hundreds of men at Claybury Asylum, and another silver medallist went from the schools to Sheffield as foreman on some large works, and is now doing well as a builder on his own account. A bronze medallist in bricklaying was employed straight from the schools as foreman bricklayer on some flats erected by the London County Council. A silver medallist in plumbing was immediately offered a position as foreman in a well-known firm, and another has recently been appointed inspector to the Pietermaritzburg municipality. Several interesting and instructive models have just been or are being prepared in the various classes; we may mention, in the carpenters' class, models of centering for Waterloo Bridge, the roof of Hampton Court Palace, and centering of intersecting circular groining.



"SANDHOUSE," WITLEY SURREY. F. W. TROUP, ARCHITECT.

# Bankruptcies.

[Abbreviations: R.O.—receiving order; P.E.—public examination; C.C.—county court; O.R.—official receiver; Adj.—Adjudication.]

DURING THE WEEK ending August 29th twelve failures in the building and timber trades in England and Wales were gazetted.

A. BOOK, builder, Colwyn Bay. R.O. August 21st.

F. E. BEST (trading as E. Dryland & Co.), builder, Ashford. R.O. August 21st.

I. CHEALE, timber merchant, Hastings. P.E., Hastings Town Hall, September 8th, at 12.

T. MATHER, painter and decorator, Birmingham. R.O. August 18th.

G. H. HALL, road contractor, Sheffield. R O and adj. August 19th.

G. ST. S. DAVEY, builder, St. Mary Church, Torquay. Liabilities £82; assets £14; deficiency £67.

M. REEVES, painter and paperhanger, Aston. Liabilities £111; assets £11.

S. FRANKLIN, builder, Sonehouse. Liabilities £516; assets £85; deficiency £431.

C. E. CHAPPEL, builder and contractor, Stockton Heath. Adj. August 18th. P.E., Warrington C.C., September 4th, at 11.

E. S. HAMMERTON, designer and manufacturer of high-class fittings, shop fronts, &c., Upton Park. R O. and adj. August 19th.

W. KEEN, builder, Walthamstow and Mitcham. First meeting, Bankruptcy Court, London, September 9th, at 11. P.E., October 16th, at 11.

J. FOSTER, office fitter and decorator. London, E.C., and Chiswick. R.O. and adj August 17th. P.E., Bankruptcy Court, October 14th, at 11.

W. WATSON, builder, Kensington. R O August 20th. First meeting Bankruptcy Court. September 4th at 12. P.E., Bankruptcy Court, October 16th, at 12.

J. W. SMITH, builder and contractor, Shirley and Small Heath. P.E., Birmingham C.C., October 29th, at 2.

G. R. SMITH, builder and joinery manufacturer, Abertillery. Liabilities £4,981; £2,298 to rank for dividend; deficiency £286.

G. R. H. WALES, builder, South Hackney. N.E. Liabilities £31 794; £6,204 to rank for dividend; assets £390.

C. O. KITLEY, builder, Plumstead. R O August 14th and adj. August 18th. First meeting, 24, Railway Approach, London Bridge, September 3rd, at 11 30. P.E., Greenwich C.C, September 8th, at 1

THE MURAL AND DECORATIONS SYNDICATE, LTD. Deficiency to creditors, £18, 04; to contributories, £28,651. The company was incorporated in 1898, with a nominal capital of £25 000, to acquire and extend a branch of the business of the Mural Decorations Co. at 50, Milton Street, City, and at Kingston-on-Thames.

The following companies are to be wound up:—

BRYANSTON HOUSE AND LAND CO., LTD. A. Phillips, liquidator.

ELECTRIC LIGHTING AND FITTINGS CORPORATION, LTD. S. Jude, liquidator.

ELECTRIC TRAMWAYS TRUST, LTD.

# Coming Events.

**Wednesday, Sept. 2, to Friday, Sept. 4.**

IRON AND STEEL INSTITUTE (Barrow-in-Furness).—Annual Meeting (second day). Inaugural address by Mr. Andrew Carnegie on "Developments of the British and American iron industry during the last thirty years." Mr. R. A. Hadfield on "Alloys of Iron and Tungsten." Mr. J. E. Stead and Mr. A. W. Richards on "The Restoration of dangerously Crystalline Steel by Heat Treatment." Messrs. J. E. Stead and A. Windsor Richards on "Sorbitic Steel Rails." Mr. Thomas Baker on "The Influence of Silicon on Iron." Prof. E. D. Campbell on "Diffusion of Sulphides through Steel." Mr. William Campbell on "The Heat Treatment of Steel." Mr. R. M. Daelen on "The Rolling of Large Pipes." Mr. D. A. Louis on "The Regulation of the Combustion in Coke-oven Practice." Mr. W. F. Pettigrew on "The Fuel used in the Barrow-in-Furness District." Mr. C. H. Ridsdale on "The Diseases of Steel." Prof. A. Stansfield on "Carbon in Iron."

**Saturday, Sept. 5.**

ASSOCIATION OF MANAGERS OF SEWAGE-DISPOSAL WORKS.—Meeting at Leeds.

**Wednesday, Sept. 9.**

INSTITUTE OF SANITARY ENGINEERS.—Meetings of Examination and Literary Committee at 3.30 p.m, of General Purposes and Finance Committee at 4.15 p.m., and of Election Committee at 5.15 p.m.

**Monday, Sept. 14.**

SANITARY INSTITUTE (Lectures and Demonstrations for Sanitary Officers, Part I.).—Mr. E. J. Steegmann on "Mechanical Physics: Laws of Motion, Hydraulics, &c.," at 7 p m.

**Wednesday, Sept. 16.**

SANITARY INSTITUTE (Lectures and Demonstrations for Sanitary Officers, Part I.)—Mr. E. J. Steegmann on "Natural Forces: Light, Heat, Electricity; Chemistry," at 7 p.m.

**Friday, Sept. 18.**

SANITARY INSTITUTE (Lectures and Demonstrations for Sanitary Officers, Part I.).—Mr. E. J. Steegmann on "The Atmosphere: Pressure and Composition; Air; Combustion and Respiration," at 7 p m

**Saturday, Sept. 19.**

NORTHERN ARCHITECTURAL ASSOCIATION.—Excursion to Sunderland.

# Electrical Notes.

**Mafeking** is proposed to be lighted by electricity generated by oil engines. A public meeting will be called to sanction a loan of £6,000 for this purpose.

**The London Traffic Commission.**—The sub-commission of six members who have been delegated to investigate all the systems of traction and transport in the United States will sail on September 18th for New York. The Commissioners are expected to return about the middle or end of October. They will visit, among other places, New York, Boston, Philadelphia and Chicago. The most important of their duties will be to closely compare subways and tube railways.

**The Paris "Tube."**—The Prefect of Police has advised the Paris Metropolitan Railway Company of the new measures of reform and the precautions for the safety of passengers which will be required to be introduced on its system. Independent lights are to be placed in every station to indicate the way out, and all needless barriers are to be removed. The company will be required to completely isolate the motor-car from the other cars composing the train. All offices and installation boxes at the stations are to be constructed of incombustible material, an independent system of lighting is to be installed and special fire-alarms are to be placed in telephonic communication with the nearest fire station. The third rail carrying the electric current is to be properly guarded, so as to protect passengers who may be obliged to walk along the track from danger of electrocution. All the stations are to have at least two exits, and air shafts are to be constructed between the stations.

**New Central Station, Brussels.**—The invitation which the municipal authorities of Brussels recently issued for the submission of tenders for the equipment of a new central station in that city does not appear to have induced any British firms to compete for the contract, if one may judge from the list of offers which has been published, this being perhaps due to the experience gained in the past. However that may be, the competition proves to have been of an international character. The tenders, which range from as low as £130,000 to as high as £212,000, have been presented by the Société d'Electricité et Hydraulique, of Charleroi, the Société Internationale d'Electricité, of Liège, the Siemens-Schuckert Works Co., Lahmeyer & Co., the Helios Co., the Swiss Oerlikon Engineering Co., Rothenhaels & Co., of Berne, and the General Electricity Co., of Berlin, in conjunction with the Union Electricity Co. of the same city. It is said that the scheme of the last combination is recommended for acceptance.

**Covered Tramcars.**—An improved cover for tramcars has been designed by Mr. E. R. Bellamy, general manager of the Liverpool Corporation tramways. It consists of a light framework similar to that used for the upper-deck covers for tramcars which have been in use in Liverpool for the last nine months; but instead of blinds being used to protect the sides, windows will be fitted which can be raised or lowered like railway carriage windows. The roof consists of sliding partitions, which will draw out and form a weather-tight top, or close up and leave two-thirds of the roof-space open to the sky. The new covers will cost about £35 each, as compared with £60, the cost of the present covers. The increased earnings of the cars which have had the covered tops during the last nine months have averaged 1½d. per car mile, or £180 per car per annum. The outlay on the old covers was therefore a very profitable one. The Tramways Committee have ordered twenty covers of the new design to be constructed at their Lambeth Road works as an experimental installation.

# Current Market Prices.

## FORAGE.

| | | £ | s. | d. | £ | s. | d. |
|---|---|---|---|---|---|---|---|
| Beans .. .. .. | per qr | 1 | 14 | 0 | 2 | 0 | 0 |
| Clover, best .. .. | per load | 4 | 7 | 6 | 4 | 15 | 0 |
| Hay, best .. .. .. | do. | 3 | 15 | 0 | 4 | 10 | 0 |
| Sainfoin mixture .. | do. | 3 | 15 | 0 | 4 | 5 | 0 |
| Straw .. .. .. | do. | 1 | 10 | 0 | 2 | 2 | 0 |

## OILS AND PAINTS.

| | | £ | s. | d. | £ | s. | d. |
|---|---|---|---|---|---|---|---|
| Castor Oil, French .. | pet cwt. | 1 | 0 | 5 | | — | |
| Colza Oil, English .. | do. | 1 | 4 | 0 | | — | |
| Copperas .. .. | per ton | 2 | 2 | 6 | | — | |
| Lard Oil .. .. .. | per cwt. | 2 | 15 | 0 | 2 | 17 | 0 |
| Lead white, ground, carbonate .. .. | do. | 1 | 4 | 10 | | — | |
| Do red .. .. .. | do | 1 | 0 | 4½ | | | |
| Linseed Oil, barrels .. | do. | 0 | 19 | 6 | | — | |
| Petroleum, American .. | per gal | 0 | 0 | $5\frac{7}{8}$ | 0 | 0 | 6 |
| Do Russian .. | do | 0 | 0 | $4\frac{5}{8}$ | 0 | 0 | $4\frac{3}{4}$ |
| Pitch .. .. .. | per barrel | 0 | 8 | 0 | | — | |
| Shellac, orange .. .. | per cwt | 7 | 18 | 0 | | — | |
| Soda, crystals .. .. | per ton | 3 | 2 | 6 | 3 | 5 | 0 |
| Tallow, Town .. .. | per cwt | 1 | 6 | 3 | 1 | 6 | 6 |
| Tar, Stockholm .. .. | per barrel | 1 | 0 | 6 | | — | |
| Turpentine .. .. | per cwt. | 2 | 2 | 6 | | — | |

## METALS.

| | | £ | s. | d. | £ | s. | d. |
|---|---|---|---|---|---|---|---|
| Copper, sheet, strong .. | per ton | 75 | 0 | 0 | | — | |
| Iron, Staffs., bar.. .. | do. | 6 | 5 | 0 | 8 | 10 | 0 |
| Do. Galvanised Corrugated sheet .. | do. | 11 | 0 | 0 | 11 | 5 | 0 |
| Lead, pig, Soft Foreign.. | do. | 11 | 3 | 9 | 11 | 5 | 0 |
| Do. do. English common brands . .. | do. | 11 | 7 | 6 | 11 | 10 | 0 |
| Do. sheet English 3lb. per sq. ft and upwards .. | do. | 14 | 0 | 0 | | — | |
| Do. pipe .. .. .. | do. | 15 | 0 | 0 | | — | |
| Nails, cut clasp, 3in to 6in. | do. | 9 | 5 | 0 | | — | |
| Do. floor brads .. | do. | 9 | 0 | 0 | | — | |
| Steel, Staffs., Girders and Angles .. .. | do. | 5 | 15 | 0 | 11 | 5 | 0 |
| Do. do. Mild bars .. | do. | 6 | 7 | 6 | 7 | 2 | 6 |
| Tin, Foreign .. .. | do. | 125 | 5 | 0 | 125 | 15 | 0 |
| Do. English ingots .. | do. | 126 | 10 | 0 | 127 | 0 | 0 |
| Zinc, sheets, Selesian .. | do. | 23 | 5 | 0 | | — | |
| Do. do. Vielle Montaigne | do. | 23 | 10 | 0 | | — | |
| Do. Spelter .. .. | do. | 21 | 0 | 0 | 21 | 10 | 0 |

## TIMBER.

### SOFT WOODS.

| | | £ | s. | d. | £ | s. | d. |
|---|---|---|---|---|---|---|---|
| Fir, Dantzic and Memel | per load | 1 | 13 | 0 | 3 | 0 | 0 |
| Pine, Quebec, Yellow .. | do. | 5 | 5 | 0 | 6 | 5 | 0 |
| Do. Pitch .. .. | do. | 2 | 12 | 0 | 3 | 3 | 0 |
| Laths, log, Dantzic .. | per fath. | 4 | 10 | 0 | 5 | 10 | 0 |
| Do. Petersburg .. | do. | 7 | 5 | 0 | | — | |
| Deals St. Petersburg, Yellow, 1st, 3×11 | do. | 13 | 10 | 0 | | — | |
| Do. do. do. do. 3×9 | do. | 13 | 5 | 0 | | — | |
| Do. do. do. do. 2½×7 | do. | 10 | 0 | 0 | | — | |
| Do. do. do. do. 3×9×6ft. to 9ft. | do. | 8 | 15 | 0 | | — | |
| Do. do. do. 3rd 3×9 and 2½×9 | do. | 9 | 15 | 0 | | — | |
| Do. do. do. do. 3×7 | do. | 9 | 5 | 0 | | — | |
| Do. do. do. do. 2½×7 | do. | 9 | 10 | 0 | | — | |
| Do. do. White 3rd, 3×9 and 2½×7 | do. | 9 | 0 | 0 | | — | |
| Do. Archangel, Yellow, 2nd, 3×9 | do. | 17 | 10 | 0 | | — | |
| Do. do. do. do. 3×7 | do. | 13 | 10 | 0 | | — | |
| Do. do. do. 3rd, 3×9 | do. | 13 | 10 | 0 | | — | |
| Do. do. do. 4th, 3×9 | do. | 8 | 15 | 0 | | — | |
| Do. Skelleftea, Yellow, 3rd, 3×9 | do. | 14 | 5 | 0 | | — | |
| Do. do. Unsorted 4×9 | do. | 8 | 5 | 0 | | — | |
| Do. Ljusne, Yellow. 1st & 2nd, 3×11 | do. | 24 | 5 | 0 | | — | |
| Do. do. do. 3×9 | do. | 21 | 10 | 0 | | — | |
| Do. do. do. 3rd, 3×9 | do. | 17 | 0 | 0 | | — | |
| Do. do. do. 4th, 4×11 | do. | 15 | 15 | 0 | | — | |
| Do. do. do. do. 3×11 | do. | 14 | 0 | 0 | | — | |
| Do. Soroka, Yellow, 1st, 3×11 | do. | 22 | 15 | 0 | | — | |
| Do. do. do. do. 3×9 | do. | 20 | 5 | 0 | 20 | 10 | 0 |
| Do. do. do. 3rd, 3×11 | do. | 13 | 5 | 0 | | — | |
| Do. do. do. do. 3×9 | do. | 13 | 5 | 0 | | — | |
| Do. Pernoviken, Yellow, 1st & 2nd 2½×8 | do. | 9 | 5 | 0 | | — | |
| Do. Kem, Yellow, 1st 3×11 | do. | 22 | 0 | 0 | | — | |
| Do. do. do. do. 3×9 | do. | 19 | 0 | 0 | | — | |
| Do. do. do. 2nd, 3×9 | do. | 15 | 15 | 0 | | — | |
| Do. Kubikenborg inferior, 5th Yellow, 2½×7 | do. | 8 | 15 | 0 | | — | |
| Do. do. do. do. do. 4×9 | do. | 6 | 5 | 0 | | — | |
| Do. do. do. do. do. 3×1 | do | 6 | 0 | 0 | | — | |
| Do. do. do. do. do. 3×9 | do. | 7 | 0 | 0 | | — | |
| Do. Quebec, Spruce, 3rd, 3×8×6 to 8ft. | do. | 7 | 15 | 0 | | — | |
| Do. do. do. 3×7 | do. | 7 | 10 | 0 | | — | |
| Battens, all kinds .. | do. | 8 | 0 | 0 | 16 | 5 | 0 |
| Flooring Boards 1in. prepared, 1st .. .. | per square | 0 | 9 | 6 | 0 | 10 | 9 |
| Do. 2nd .. .. | do. | 0 | 9 | 0 | 0 | 11 | 0 |
| Do. 3rd &c. .. .. | do. | 0 | 8 | 0 | 0 | 10 | 6 |

### HARD WOODS.

| | | £ | s. | d. | £ | s. | d. |
|---|---|---|---|---|---|---|---|
| Ash, Quebec .. .. | per load | 3 | 12 | 6 | | — | |
| Birch, Quebec .. .. | do. | 3 | 12 | 6 | 3 | 17 | 6 |
| Box, Turkey .. .. | per ton | 15 | 0 | 0 | 20 | 0 | 0 |
| Cedar, Cuba .. .. | per ft. sup. | 0 | 0 | 5¼ | | — | |
| Do. Honduras .. | do. | 0 | 0 | $5\frac{31}{32}$ | | — | |
| Do. Tobasco .. .. | do. | 0 | 0 | $4\frac{31}{32}$ | | — | |
| Elm, Quebec .. .. | per load | 4 | 0 | 0 | | — | |
| Mahogany, Average Price for Cargo, Honduras .. | per ft. sup. | 0 | 0 | $6\frac{1}{32}$ | | — | |
| Do. African .. | do. | 0 | 0 | $4\frac{3}{8}$ | | — | |
| Do. St. Domingo | do. | 0 | 0 | $3\frac{29}{32}$ | | — | |
| Do. Cuba .. | do. | 0 | 0 | $5\frac{19}{32}$ | 0 | 0 | $6\frac{9}{32}$ |

# Complete List of Contracts Open.

| DATE OF DELIVERY. | WORK TO BE EXECUTED. | FOR WHOM. | FROM WHOM FORMS OF TENDERS MAY BE OBTAINED. |
|---|---|---|---|
| | **BUILDING:** | | |
| Sept. 3 | Annan, Scotland—Additions to Hospital | Directors | A. Tweedie, 43 Lady Street, Annan. |
| " 3 | Glenmount, near Kanturk, Ireland—Additions | G. S. Bolster | W. H. Hill & Sons, 28 South Mall, Cork. |
| " 3 | Tredegar, Wales—Ten Houses | J. C. Bennett | W. S. Williams, Architect, Tredegar. |
| " 3 | Wrexham—Bathrooms | Rural District Council | G. Morison, Architect King Street, Wrexham. |
| " 3 | Bermondsey Offices, &c., at Town Hall | Borough Council | R J. Angel, Borough Surveyor, Town Hall, Spa Road, S.E. |
| " 3 | Trealaw, Wales—School | Ystradyfodwg School Board | J. Rees, Architect. Hillside Cottage, Pentre. |
| " 3 | Dundee—Sanitary Convenience | Town Council | W. Mackison, 91 Commercial Street, Dundee. |
| " 4 | Culver Cliff, nr. Sandown, Isle of Wight—Coastguard Bldgs. | Admiralty | Superintending Engineer, H.M. Dockyard, Portsmouth. |
| " 4 | Barry Docks—Mercantile Marine Office | Commissioners of H.M.Works,&c | Secretary, H.M. Office of Works, &c., Storey's Gate, S.W. |
| " 4 | Batley—Town Hall Extensions | Corporation | W. Hanstock & Son, Architects, Branch Road, Batley. |
| " 4 | Mexborough, Yorks—Church | —— | J. Wills & Sons, Victoria Chambers, Derby. |
| " 4 | Portstewart, Ireland—Church | Rev. D. Aiken | S. C. Hunter, Scottish Provident Buildings, Belfast. |
| " 5 | Darenth, near Dartford, Kent—Relaying Floor, &c. | Metropolitan Asylums Board | T. D. Mann, Clerk, Board's Offices, Embankment. E.C. |
| " 5 | Ravensthorpe, Yorks—Extension of School | —— | C. H. Marriott, Son & Shaw, Archts., Church St. Chbrs., Dewsbury. |
| " 5 | Batley—Tower | —— | O. J. Kirby, Borough Surveyor, Branch Road, Batley. |
| " 7 | Ballina—Diocesan Seminary | Most Rev. Dr. Conmy | W. H. Byrne & Son, 20 Suffolk Street, Dublin. |
| " 7 | Cannock, Staffs—Hospital | Rural District Council | H. M. Whitehead, Council's Engineer, Penkridge, near Stafford. |
| " 8 | Barking, Essex—Twelve Cottages | Urban District Council | C. J. Dawson, Architect, East Street, Barking. |
| " 8 | Coventry—Science Buildings | —— | H. W. Chattaway, Architect, Trinity Churchyard, Coventry. |
| " 8 | Cannock, Staffs—Laundry Alterations | Guardians | A Veall, 84 Darlington Street, Wolverhampton. |
| " 8 | Bermondsey Extension of Buildings, &c. | Borough Council | R. J. Angel, Borough Surveyor, Town Hall, Spa Road, S.E. |
| " 8 | Edmonton—Portland Cement | Urban District Council | G. E. Eachus, Engineer, Town Hall, Edmonton. |
| " 8 | Bradford—Industrial Hall | —— | J. Ledingham and F. E. P. Edwards, District Bank Chbrs., Bradford. |
| " 10 | London, N.W.—Four Bedrooms at Infirmary | St. Pancras Guardians | A. A. Millward, Clerk, Town Hall, Pancras Road, N.W. |
| " 10 | Kingswood, near Bristol—School | Gloucestershire Educ.Committee | J. Mackay, Architect, Richmond Place, Kingswood. |
| " 10 | Bordesley and Olton—Wall, &c. | Great Western Railway Co. | Company's Engineer. Wolverhampton Station. |
| " 10 | Manorhamilton, Ireland—Cottages | Rural District Council | P. Keany, Clerk, Workhouse, Manorhamilton. |
| " 10 | Workington—Shop and Hall | Beehive Co-op. Society, Ltd. | W. G. Scott & Co., Architects, Victoria Buildings, Workington. |
| " 10 | Wrexham—Bridge, &c. | Rural District Council | T. R. Evans, Highway Surveyor, Johnstown, Ruabon. |
| " 11 | London, E.—Bandstand, &c. | London County Council | Architect's Dept., General Constrn. Sec., 15 Pall Mall East, S.W. |
| " 11 | Hastings—Lodge | Corporation | P. H. Palmer, Borough Engineer, Town Hall, Hastings. |
| " 14 | Armagh—Four Cottages, &c. | Lunatic Asylum Committee | R. H. Dorman, Court House, Armagh. |
| " 14 | Penygraig, Wales—Departments for Boys and Girls | Ystradyfodwg School Board | J. Rees, Hillside Cottage, Pentre. |
| " 14 | Pontypridd—Public Offices | Urban District Council | H. T. Hare, 13 Hart Street, London, W.C. |
| " 14 | Hemsworth—Fifteen Houses | —— | J. Simmons, Hague Lane, Hemsworth. |
| " 14 | Westgate—Rebuilding Hotel | —— | J. Jackson, Architect, Barry Street, Bradford. |
| " 14 | Leeds—Five Houses, &c. | F. Terry | W. M. Coggill, Architect, Stourton, Hunslet. |
| " 14 | Nottingham—School | School Board | F. B. Lewis, Architect, Barry Street, Bradford. |
| " 14 | Bramhope—House | —— | Child & Co., 149 Park Lane, Leeds. |
| " 14 | Woodhouse—Club Premises | North-West Ward, Liberal Asso. | T. A. Buttery and S. B. Birds, 1 Basinghall Square, Leeds. |
| " 14 | Whitby—Additions to Brewery | R. D. Spaven & Co. | H. G. Walker, Architect, Skinner Street, Whitby. |
| " 14 | Thurles—Residence | —— | W. Maher, Main Street, Thurles. |
| " 14 | Glyncorrwg—Four Houses | —— | D. Lewis, Glyncorrwg. |
| " 14 | Winfrith—Alterations to House | E. Hughes | F. R. Bates, Architect, Newport, Mon. |
| " 14 | Bishop Auckland—Minister's House | —— | T. E. Davidson, Architect, Newcastle-on-Tyne. |
| " 14 | Hereford—Repository | Greenland's, Ltd. | W. W. Robinson, Architect, King Street, Hereford. |
| " 14 | Brampton—Residence | —— | Rev. T. W. Willis, Lanercost Vicarage, Brampton. |
| " 14 | Salford—School | —— | L. C. Evans, Town Clerk, Town Hall, Salford. |
| " 14 | Wimbledon—Two Blocks of Flats | Soldiers' and Sailors' Fam. Assoc. | C. E. L. Parkinson, 44 Bedford Row, W.C. |
| " 14 | Colchester—Wesleyan Church and School | —— | Coodey & Cressall, Architects, Victoria Chamber, Colchester. |
| " 14 | Macclesfield—Shop | Equitable Provident Society | J. Wright, Architect, Macclesfield. |
| " 14 | Bingley—Detached Residence | —— | E. H. Parkinson, Architect, Old Branch Chambers, Bradford. |
| " 14 | Longfleet—Infirmary Buildings at Workhouse | —— | H. F. J. Barnes, Architect, Poole. |
| " 14 | Leeds—Additions to Council School | Education Committee | W. S. Braithwaite, Architect, Calverley Street, Leeds. |
| " 14 | Keswick—Reslating Inn and Cottage | —— | Jennings Brothers, Ltd., Castle Brewery, Cockermouth. |
| " 14 | Hull—Villa | —— | J. M. Dossor, 2 Manor Street, Hull. |
| " 14 | Dundalk—Extension of Shops | Gt.Northern Rly. Co. (Ireland) | Company's Engineer-in-Chief, Amiens St. Terminus, Dublin. |
| " 14 | Edinburgh—Extension of Electric Power Station | Corporation | Clerk, Public Works Office, City Chambers, Edinburgh. |
| " 14 | Wolston, near Coventry—Thirty-four Cottages | Blummel & Brothers | H. W. Chattaway, Architect, Trinity Churchyard, Coventry. |
| " 14 | Finchley—Sixty Workmen's Dwellings | Urban District Council | E. H Lister, Clerk, Finchley Hall, Church End, Finchley, N. |
| " 16 | Birmingham—Boiler House, &c. | Corporation | Mansergh & Sons, 5 Victoria Street, Westminster, S.W. |
| " 17 | Preston—Power Station, &c. | Corporation | W. H. Tittensor, 25 Burrow Road, Preston. |
| " 17 | Wern, Salop—Market House and Assembly Hall | Urban District Council | J. Brown, 12 Castle Street, Shrewsbury. |
| " 17 | London, S.E.—Repairs to Roofs, &c | Southwark Union Guardians | A. J. Wade, 36 Fifth Avenue, Harrow Road, W. |
| " 18 | Portsmouth—Manual Instruction Centres | Education Committee | A. H. Bone, Architect, Cambridge Junction, Portsmouth. |
| " 19 | Lancaster—Produce Market | Properties Committee | J. C. Mount, Borough Surveyor, Town Hall, Lancaster. |
| " 26 | Wigan—Cemetery Works | Burial Board | W. B. Johnson & Son 31 King Street, Wigan. |
| No date. | Chipstead, Surrey—Residence and Outbuilding | —— | H. G. Gribble, Architect, Hill View, St John's, nr. Woking, Surrey. |
| " | London, W.—Block of Shops and Flats | —— | Palgrave & Co., 28 Victoria Street, Westminster, S.W. |
| | **ENGINEERING:** | | |
| Sept. 3 | Aston, Birmingham—Reconstructing Tramways | Urban District Council | R. Green, 37 Waterloo Street, Birmingham. |
| " 3 | Glasgow—Pumping Station | Prince's Dock Branch Joint Committee. | J. Deas, 53 Bothwell Street, Glasgow. |
| " 4 | London, N.—Alterations to Hot-Water Supply | Metropolitan Asylums Board | T. D. Mann, Clerk. Board's Offices, Embankment, E.C. |
| " 5 | Radcliffe, Lancs—Tramway and Lighting Feeders, &c. | Urban District Council | S Mills, Clerk, Council Offices, Radcliffe. |
| " 5 | Dunbeath and Latheronwheel, Scotland—Waterworks | —— | Jenkins & Marr, 16 Bridge Street, Aberdeen. |
| " 7 | Worthing—Storage Battery Reconstruction | Corporation | Burstall & Monkhouse, 14 Old Queen Street, Westminster. |
| " 7 | Margate—Sea Wall, &c. | —— | E. A. Borg, Borough Engineer, Town Hall, Margate. |
| " 7 | Pietermaritzburg—Electric Tramway | Corporation | Mordey & Dawbarn, 82 Victoria Street. London, S.W. |
| " 8 | Cannock—Laundry Machinery | Guardians | Wilcox & Raikes, 63 Temple Row, Birmingham. |
| " 8 | Dixmude-Ypres-Paperinghe—Railway | Société Nationale des Chemins de Fer Vicinaux. | Director-General, 14 Rue de la Science, Brussels. |
| " 10 | Longparish, Andover—Bridge | Rural District Council | J. Wormald, District Surveyor, The South Cottage, Andover. |
| " 11 | Stoke-on-Trent—Electrical Plant | Corporation | P. J. S. Tiddeman, Field Place, Stoke-on-Trent. |
| " 11 | Palamos—Telephone System | —— | Registry of Directorate of Posts and Telegraphs, 10 Calle de Carritas, Madrid. |
| " 12 | Sydney—Electric Tramway Generating Set | Railway Commissioners | Agent-General for New South Wales, 9 Victoria Street, S.W. |
| " 14 | Portsmouth—Repairs to Pumps | Corporation | Borough Engineer, Town Hall, Portsmouth. |
| " 14 | Aultbea, Scotland—Pier | —— | Mr. Manners, 12 Lombard Street, Inverness. |
| " 15 | Pittenweem, Scotland—Quay, &c. | Town Council | D. & C. Stevenson, 84 George Street, Edinburgh. |
| " 16 | Talgarth, Brecon—Waterworks | Hay Rural District Council | R. E. W. Berrington, Engineer, Bank Buildings, Wolverhampton. |
| " 18 | Rio de Janeiro—Rolling Stock | Brazilian Central Railway Co. | Commercial Intelligence Branch, Board of Trade, 50 Parliament Street, S.W. |
| " 20 | London, W.—Sweeping Machine | Paddington Borough Council | E. B. B Newton, Borough Surveyor, Town Hall, Paddington W |
| " 22 | Jassy, Roumania—Waterworks | Corporation | Mayor, Jassy, Roumania |
| " 23 | Estremoz-Castello de Vide—Railway | Portugal State Railways | Sessions Hall, Council of Administration of State Rlys., Lisbon. |
| " 27 | Pozoblanco, Spain—Electric Lighting Town | —— | Municipal Authorities, Pozoblanco. |
| " 28 | Launceston, Tasmania—Electric Meters | —— | J. Terry & Co., 7 Great Winchester Street, E.C. |
| " 30 | Brisbane, Queensland—Postal and Telegraph Material | —— | Department Stores, Navy Street, Brisbane. |
| Oct. 1 | Utrecht, Netherlands—Electricity Supply Station | Town Council | Gemeente-Secretaire of Utrecht. |
| " 5 | Dublin—Electric Crane | Port and Docks Board | J. P. Griffith, Engineer, East Wall, Dublin. |
| " 6 | London, S.E.—Steam Engines | London County Council | County Hall, Spring Gardens, S.W. |
| " 6 | Vauxhall—Steel Superstructure and Granite Piers of Bridge | London County Council | Engineer's Department, County Hall, Spring Gardens, S.W. |
| " 10 | Valencia—Port Works | Committee | Secretaria da la Junta de obras del, puerto de Valencia. |
| " 30 | Marina, Upper Barracca, Malta—Lift | Crown Agents for the Colonies | Receiver-General and Director of Contracts, Valletta, Malta. |
| Dec. 15 | Los Andes, Chili—Railway | —— | Commercial Intelligence Branch, Board of Trade, 50 Parliament Street, S.W. |
| 1904. Feb. 1 | Cairo—Three Road Bridges over Nile | Ministry of Public Works | Commercial Intelligence Branch, Board of Trade, 50 Parliament Street, S.W. |
| | **FURNITURE:** | | |
| Sept. 3 | Etwall, Derby—Hospital Furniture | Repton Isolation Hospital Committee. | C. F. Chamberlain, Clerk, Union Offices, Burton-on-Trent. |

# Complete List of Contracts Open *—continued*

| DATE OF DELIVERY. | | WORK TO BE EXECUTED. | FOR WHOM. | FROM WHOM FORMS OF TENDERS MAY BE OBTAINED. |
|---|---|---|---|---|
| | | **IRON AND STEEL:** | | |
| Sept. | 3 | Manchester—Steel Roof | Gas Committee | C. Nickson, Superintendent, Gas Department, Town Hall, Manchester |
| " | 4 | Nottingham—Hurdle Fencing | Public Parks Committee | F. B. Lewis, City Architect, Guildhall, Nottingham. |
| " | 7 | Greenock—Ashbins | Parish Council | Mr. Fairlie, 36 Nicholson Street, Greenock. |
| " | 9 | London, E.C.—Steel and Iron Work | East Indian Railway Co. | C. W. Young, Secretary, Nicholas Lane, E C. |
| " | 9 | Leicester—Roofs to Engine and Boiler Houses | Corporation | E. G. Mawbey, Borough Surveyor, Town Hall, Leicester. |
| " | 11 | London, E.—Iron Railings | London County Council | Architect's Department, General Construction Section, 15 Pall Mall East, S.W. |
| | | **PAINTING AND PLUMBING:** | | |
| Sept. | 4 | Ramsgate—Painting and Decorating Church | —— | Mr. Welden, 40 High Street, Ramsgate. |
| | | **ROADS AND CARTAGE:** | | |
| Sept. | 4 | Cardiff—Materials | Guardians | A. J. Harris, Clerk, Queen s Chambers, Cardiff. |
| " | 4 | Exeter—Roadway | —— | Ellis, Son & Bowden, Surveyors, Bedford Chambers, Exeter. |
| " | 5 | Heswell, Cheshire—Lane Construction | Rural District Council | T. Davies, 33 Kingsland Road, Birkenhead. |
| " | 5 | London, S.W.—Road, &c. | —— | E. Millard, 1 Finsbury Circus, E.C. |
| " | 5 | Thornhill, near Dewsbury—Flagging, &c. | Urban District Council | S. W. Parker, Surveyor, Council Offices, Thornhill. |
| " | 5 | Cockermouth—Road | —— | Lieut. J. Mayson, Market Place, Cockermouth. |
| " | 5 | Wakefield—Street Works | —— | City Surveyor, Town Hall, Wakefield. |
| " | 7 | London, S.E.—Asphalt Paving | Camberwell Borough Council | W. Oxtoby, Borough Engineer, Town Hall, Peckham Road, S.E. |
| " | 7 | Carrickfergus, Ireland—Road Metal | Urban District Council | J. Boyd, Clerk, Council Offices, Town Hall, Carrickfergus. |
| " | 7 | Teddington—Street Improvements | Urban District Council | Mr. Hainsworth, Surveyor, Public Offices, Teddington. |
| " | 7 | Camberwell, S.E.—Paving Roadway | Borough Council | W. Oxtoby, Borough Engineer, Town Hall, Camberwell, S.E. |
| " | 8 | Southampton—Tar Paving | Corporation | J. A. Crowther, Borough Engineer, Market Chmbrs., Southampton. |
| " | 8 | Barking, Essex—Making-up, &c. | Urban District Council | C. F. Dawson, Council's Surveyor, Public Offices, Barking. |
| " | 11 | Totnes, Devon—Road Works | Rural District Council | S. S. Rendle, Surveyor, Hillside, Marldon Road, Paignton. |
| " | 16 | South Shields—Materials | Corporation | S. E. Burgess, Borough Engineer, Chapter Row, South Shields. |
| " | 16 | Isleworth—Making-up Roads | Urban District Council | P. G Parkman, Engineer, Town Hall, Hounslow, W. |
| " | 16 | London, S.W.—Granite Spalls | Wandsworth Guardians | F. W. Piper, Clerk, Union Offices, St. Johns' Hill, Wandsworth. |
| " | 21 | Paddington—Making-up and Paving Roads | Borough Council | E B. B. Newton, Borough Surveyor, Town Hall, Paddington, W. |
| " | 26 | Wigan—Roads, &c. | Burial Board | W. B. Johnson & Son, 31 King Street, Wigan. |
| " | 31 | Dunstable—Steam Rolling | Town Council | G. Simcox, Borough Surveyor, Town Hall, Dunstable. |
| | | **SANITARY:** | | |
| Sept. | 3 | Blaydon-on-Tyne—Scavenging | Urban District Council | R. Biggins, Sanitary Inspector, Council Offices, Blaydon. |
| " | 3 | Ramsbottom, Lancs—Removal of Nightsoil, &c. | Urban District Council | Inspector of Nuisances, Council Offices, Market Pl., Ramsbottom. |
| " | 6 | Portsmouth—Sewage-Collecting Tank, &c. | Corporation | Borough Engineer, Town Hall, Portsmouth. |
| " | 12 | Downpatrick, Ireland—Sewer | Rural District Council | Clerk, Council Offices, Downpatrick. |
| " | 17 | Croydon—Sewers, &c. | Rural District Council | R. M. Chart, Union Bank Chambers, Croydon. |
| " | 19 | Harrogate—Drainage Works | —— | E. W. Dixon, 5 Prospect Crescent, Harrogate. |
| " | 26 | Wigan—Drains, &c. | Burial Board | W. B. Johnson & Son, 31 King Street, Wigan. |
| | | **TIMBER:** | | |
| Sept. | 14 | Egypt—Timber for Wagons | Egyptian State Railways | Commrcl. Intelligence Branch, Bd. of Trade, 50 Parliament St., S.W |
| " | 28 | London, E.C.—Telegraph Poles | —— | S. C. Hoolley, 17-19, Bedford Street, London, W.C. |

# List of Competitions Open.

| DATE OF DELIVERY. | | DESIGNS REQUIRED. | AMOUNT OF PREMIUM. | DEPOSIT REQUIRED FOR CONDITIONS, &c. | BY WHOM ADVERTISED. |
|---|---|---|---|---|---|
| Sept. | 12 | Stonehaven, Scotland—Alterations and Additions to Town Hall. | —— | —— | G. Murdoch, Borough Surveyor, Stonehaven. |
| " | 12 | Howden, Yorks—Sewerage Improvement | £15 and commission. | —— | H. Green, Clerk, Council Offices, Howden. |
| " | 22 | Ayr—Hospital, &c. | —— | —— | J. E. Shaw, Clerk, Lunacy Board, County Buildings, Ayr. |
| " | 26 | Leyland, Lancs—Laying-out Land, &c. | £15 15s. | —— | M. H. Wilkinson, 21 Towngate, Leyland. |
| " | 29 | Brighton—Hospital | £50, £30, £20. | £1 1s. | L. Holmes, 76 West Street, Brighton. |
| " | 30 | Dublin—Workmen's Cottages | £20. | —— | F. B. Ormsby, Secretary, Kingsbridge Terminus, Dublin. |
| Oct. | 1 | Heywood—Library | £30, £20, £10. | £1 1s. | J. A. Settle, Borough Engineer, Municipal Buildings, Heywood. |
| " | 2 | Bromley, E.—Public Library | £75, £25. | 10s. 6d. | H. Heckford, Borough Surveyor, Council Offices, High Street, Poplar. |
| " | 7 | Saltwood—Sewage Disposal | £31 10s. | —— | R. Lonergan, 11 Cheriton Place, Folkestone. |
| " | 12 | Rawtenstall—Free Library, &c. | £100, £50, £30. | £2. | A. W. Lawson, Borough Surveyor, Municipal Offices, Rawtenstall. |
| 1904 Mar. | 31 | Vienna—Machinery to Lift Boats on Canal | 100,000, 75,000 and 50,000 kronen. | —— | Austro-Hungarian Consulate-General, 22 Laurence Pountney Lane, E.C. |

# New Companies.

W. G. Bennett, Ltd., brick and tile manufacturers builders' merchants, &c., St. Albans. Capital: £5,000 in £1 shares.

E. Timmins & Sons, Ltd., civil, mechanical, electrical, &c., engineers, &c., Bridgewater Foundry, Runcorn, Cheshire. Capital: £50,000 in £1 shares.

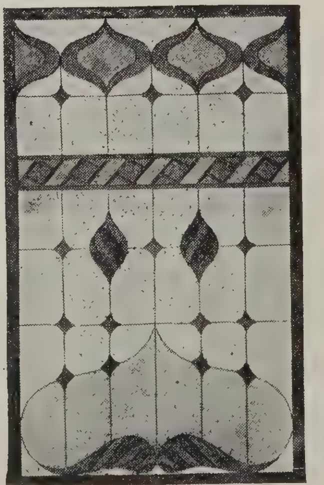
Quibell, Son & Greenwood, Ltd., builders' contractors, sawmill proprietors, brick and tile manufacturers, &c., Fountain Road, Hull. Capital: £8,000 in £1 shares (1,000 preference).

Putna Forests and Sawmills Co., Ltd., timber growers and merchants, sawyers, &c., 36-37, Bishopsgate Street Within, E.C. Capital: £110,000 in £1 shares (10,000 preference, 60,000 "A" ordinary and 40,000 "B" ordinary).

Castle Artificial Stone and Builders' Merchants' Co., Ltd., artificial stone manufacturers and builders' merchants, quarry owners, paviors, granite, marble and stone merchants, brick and tile merchants, &c., East Street, Gateshead, Durham. Capital: £2,000 in £1 shares.

The Promenade at Aberystwyth is being extended around the castle grounds.

The Abbey Church at Wymondham, which is distinguished in the possession of two towers, is to be restored at an estimated cost of £25,000.



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OFFICE HOURS:—9.0 to 6.0 (Saturday 9.0 to 1.0).
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## Appointments Wanted.

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ARCHITECT'S ASSISTANT (22) wants SITUATION. Six years' experience. Quantities, abstracting and billing. Drawings from rough sketches, details, specifications, surveying, levellings, and office routine. Salary 25s.—Box 2542, Builders' Journal Office, 9, East Harding Street, Fetter Lane, E.C.

AS CLERK OF WORKS. Long varied experience in the trade. Structural Steel Work, Concrete, Brick, and Stone. Used to large works. Good testimonials, &c.—Box 2549, Builders' Journal Office, 9, East Harding Street, Fetter Lane, E.C.

BUILDER AND DECORATOR'S or CONTRACTOR'S CLERK (22), Certificated, desires Engagement. P.c. jobbing accounts, tracing, office routine, outdoor supervision. Energetic, excellent references, moderate salary. Disengaged. — P. W., 1, Lawn Villas, Worthing.

CARPENTER AND JOINER, 14 years' experience in Building and Timber Trades, seeks Situation as Working Manager of Small Business or Timber Yard, or as Assistant to Builder. Would Travel part time, assist with Books, &c., if required. Knowledge of Wood-working Machinery, Lathe, Gas Engine, &c. Age 31. Abstainer. Excellent references Moderate salary.—"Beltana," 2, Park Road, Gravesend.

CLERK OF WORKS or GENERAL FOREMAN Disengaged. Experienced and well up with all trades. Good draughtsman. Energetic. 33. Town or Country.—H., 18, Queensmill Terrace, Fulham Palace Road, Fulham, S.W.

ENGINE DRIVER requires Berth. Can do all repairs. Has had seven years' workshop experience. Highest references.—C. B., 1, Petley Road, Hammersmith.

GENERAL FOREMAN, aged 32, seeks ENGAGEMENT. Reliable, energetic, good manager, and experienced in all branches. Undeniable references.—W. T. C. Bierton, Aylesbury, Bucks.

GOOD MASON wants Job. Abstainer. Good draughtsman. Capable of setting out. References. — Mason, Stone Works, Frinton-on-Sea, Essex.

HANDY MAN.—Good Plumber, Gas, Hot Water, e. b.; good all-round man, thoroughly competent, wants JOB. 9½d.—Seeder, 47, Clacton Road, Walthamstow.

JUNIOR ASSISTANT requires Engagement. Student R.I.B.A, preparing for Final Examination. — E. Hastewell, The Grange, Haltwhistle.

PLUMBER and FITTER wants PIECE-WORK. Own plant. Good personal references from architect and builder finishing large job in West End.—Plumber, 114, Clifton Road, Norbiton.

## Appointments Vacant.

ARCHITECT'S PUPIL.—A vacancy occurs in busy West End office. Very small premium required, but must be fond of drawing and industrious. —Barrett, 23, York Place, Baker Street.

JUNIOR DRAUGHTSMAN, one used to measuring up and iron work preferred.—Apply, by letter, stating age and experience and salary required, to X., c/o Spiers and Pond, Ltd., Advertising Agents, 35, New Bridge Street, E.C.

WANTED First-class MAN to take charge of Bricklaying Department; also good Stove, Range, and Tile Setter.—Apply, B. J., c/o W. H. Smith and Son, Railway Station, West Hartlepool.

WANTED, SMART Junior DRAUGHTSMAN in Engineering Works, London. Must understand building construction. Preference given if knowledge Shorthand and Typewriting.—Apply, stating qualifications, age, salary required, Box 2544, Builders' Journal Office, 9, East Harding Street, Fetter Lane, E.C.

## Miscellaneous.

*The charge for Advertisements under this heading is 1s. 6d. per insertion not exceeding four lines, and 6d. per line afterward, prepaid. Three insertions may be had for the price of two. Advertisements must reach the Office not later than 5 o'clock on Monday.*

ACCOUNTANT of wide experience willing to open builders' books on new simple system giving perfect prime cost. Same kept in order periodically if desired. Surveys made. Designs and specifications of all kinds prepared.—58, Walterton Road, W.

MORTGAGE SECURITIES WANTED from £1,000 to £25,000 for large fund immediately available for advances.—Apply W. P. Neal, Esq., Pinner's Hall, Great Winchester Street, London, E.C.

QUANTITIES. A course of Correspondence Lectures on the preparation of Quantities on the most approved London System WILL COMMENCE SEPTEMBER 28th. For particulars apply Box 2546, Builders' Journal, 9, East Harding Street, Fetter Lane, E.C.

R.I.B.A., Society of Architects, and Civil Service Technical Examinations. Preparations by correspondence. Twenty-two first places.—G. A. T. Middleton, 19, Craven Street, W.C.

R.I.B.A. EXAMS. — Personal and Correspondence tuition; courses of any duration. Apply for syllabus to Mr. A. G. Bond, B.A.Oxon., A.R.I.B.A., 115, Gower Street, London, W.C. (late Howgate and Bond).

STRUCTURAL STEELWORK. — Structural engineer resident in London receives evening pupils for theory and practice of design of roof, girder, and bridge work, and undertakes the designing of all types of structures.—Address, No. 2536, Builders' Journal Office, 9, East Harding Street, E.C.

TO ARCHITECTS, BUILDERS, AND OTHERS.—Plans prepared at lowest charges; Tracings from 5s. Specifications, &c., accurately typewritten, 1s. per 1,000 words.—D. R. Mathison, 39a, Algernon Road, Hendon.

## Miscellaneous Articles for Sale.

ARCHITECTS, BUILDERS. Parquet and Wood Block Flooring. Best material. Experienced workmanship. Low prices. Builders' blocks laid in special composition.—William Ludlow, 84, Shern Hall Street, Walthamstow.

LIFTS.—WM. AUG.'S GIBSON, Ltd., formerly President of American Elevator Co., later Managing Director Otis Elevator Co., Ltd. Temple Bar House, 28, Fleet Street, London, E.C.

**6,000 TEA SETS, 3/6. 4,000 DINNER-SETS, 7/6 each. (Finest quality.) The Two Services sent for 10/6. Builders and Furnishers requiring China contracts, should write for quotations.—ARTHUR J. HULL, Dept. 71, King Street Pottery, Longton, Staffs.**

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|---|---|
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| 2. **Holywell Street,** from St. Clement Dane's Church (since demolished). | 1s. 0d. each. |
| 3. **The "Old Bell,"** Holborn (since demolished). | 1s. 0d. each. |
| 4. **Leather Lane,** Holborn. | 1s. 0d. each. |
| 5. **Davies Street** (since demolished). | 6d. each. |
| 6. **Fetter Lane,** View from Holborn. | 6d. each. |
| 7. **King Street,** Westminster (since demolished). | 1s. 0d. each |
| 8. **Staple Inn,** Holborn. | 1s. 0d. each. |
| 9. **Milford Lane,** Strand, and Booksellers' Row, looking West (since demolished). | 6d. each. |
| 10. **Lincoln's Inn Fields.** | 1s. 0d. each. |
| 11. **Archway,** Portugal Street, Lincoln's Inn Fields. | 6d. each. |
| 12. **Old Houses in Strand.** | 6d. each. |
| 13. **Exchange Court,** Strand. | 6d. each. |
| 14. **Foubert's Place,** Regent Street. | 1s. 0d. each. |
| 15. **Rupert Street, W.** | 6d. each. |
| 16. **Wych Street,** Strand (since demolished). | 1s. 0d. each. |
| 17. **Booksellers' Row,** looking East (since demolished). | 1s. 0d. each. |
| 18. **George Court,** Strand. | 6d. each. |

OR

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**NOTE.—Advertisements for this page must reach the Office not later than 5 o'clock p.m. on Monday.**

# Tenders.

*Information from accredited sources should be sent to "The Editor" at latest by noon on Monday if intended for publication in the following Wednesday's issue. Results of Tenders cannot be accepted unless they contain the name of the Architect or Surveyor for the work.*

*Addressed postcards on which lists of tenders may be stated will be sent post free on application to the Manager,* BUILDERS' JOURNAL, 9, *East Harding Street, E.C.*

**Bawtry (Yorks).**—For alterations to two shops at High Street, Bawtry: new fronts, &c., for Mr. H. J. Willows. Mr. E. Hall Ballan, architect, 19 and 20, Baxter Gate, Doncaster. Quantities by Mr. Hoffman Wood, 14, Park Square, Leeds:—

| | | |
|---|---|---|
| Sprakes & Sons, Doncaster | £645 | 0 |
| G. F. Marrison,* Bawtry | 552 | 10 |

* Accepted.

**Bawtry (Yorks).**—Accepted for the erection of new stables, &c., and construction of new road in Swan Street, Bawtry, for Mr. H. J. Willows. Mr. E. Hall Ballan, architect, 19 and 20, Baxter Gate, Doncaster. Quantities by Mr. Hoffman Wood, 14, Park Square, Leeds:—

| | |
|---|---|
| Sprakes & Son, Doncaster | £900 |

**Bristol.**—For the construction of roads and sewers adjacent to Mina Road, Bristol, for Messrs. Hemmings & Cunningham. Messrs. Holbrow & Oaten, surveyors, 9, Clare Street Bristol:—

| | | | |
|---|---|---|---|
| Thatcher Brothers | £1,518 | 0 | 9 |
| W. & J. Bennett | 1,380 | 0 | 0 |
| W. Thomas | 1,177 | 0 | 11 |
| A. Webb | 1,078 | 18 | 11 |
| G. Hedges* | 1,053 | 0 | 0 |

* Accepted.

**Bristol.**—For the construction of Moorlands Road, Fishponds, for Mr. F. Brown. Messrs. Holbrow & Oaten, surveyors, 9, Clare Street, Bristol:—

| | | | |
|---|---|---|---|
| E. Clark | £110 | 0 | 0 |
| A. Webb | 93 | 15 | 1 |
| W. Thomas* | 60 | 0 | 0 |
| G. Hedges | 59 | 11 | 6 |

* Accepted.

**Bristol.**—For the construction of sewers at Horfield, for Messrs. Helliar and others. Messrs. Holbrow & Oaten, surveyors, 9, Clare Street, Bristol:—

| | | |
|---|---|---|
| W. Thomas | £171 | 15 |
| G. Hedges | 152 | 0 |
| T. Williams* | 130 | 8 |

* Accepted.

**Bristol.**—For alterations to No. 392, Gloucester Road, Horfield, for Mr. E. Jenkins. Messrs. Holbrow & Oaten, architects, 9, Clare Street, Bristol:—

| | | |
|---|---|---|
| F. J. Slade | £148 | 0 |
| E. Preece | 128 | 10 |
| C. Jennings | 110 | 10 |
| W. Foster | 110 | 0 |
| F. Brown* | 103 | 18 |

* Accepted.

**Bristol.**—For decoration and repairs to Tyndale Chapel and lecture hall, Whiteladies Road, Clifton, for the deacons. Messrs. Holbrow & Oaten, architects, 9, Clare Street, Bristol:—

| | | |
|---|---|---|
| W. Cowlin & Son | £161 | 0 |
| Cottrell Brothers | 148 | 10 |
| B. P. Chick & Co. | 109 | 0 |
| Brown & Pierce | 97 | 10 |

* Accepted.

**Bristol.**—Accepted for the erection of council schools, Wick Road, Brislington, Bristol, for the Bristol Education Committee. Messrs. Holbrow & Oaten, architects, 9, Clare Street, Bristol. Quantities by Mr. J. Maynard Froud, Baldwin Street, Bristol:—

| | |
|---|---|
| General contract—T. R. Lewis | £10,035 |
| Plumbing contract—G. F. Tuckey | 724 |

**Cardiff.**—For new electrical department for lupus treatment, &c., at the Cardiff Infirmary. Mr. Edwin Seward, F.R.I.B.A., architect, Cardiff:—

| | | | |
|---|---|---|---|
| Lattey & Co. | £2,433 | 14 | 5 |
| G. Hallett | 2,320 | 0 | 0 |
| Knox & Wells | 2,261 | 0 | 0 |
| Symonds & Co. | 2,143 | 5 | 4 |
| F. Small | 2,120 | 0 | 0 |
| Tucker Brothers | 2,098 | 8 | 0 |
| Beames & Nephew* | 1,972 | 10 | 0 |

* Accepted.

**Doncaster (Yorks).**—For the erection of a cottage at Balby, for Mr. C. Whitworth. Mr. E. Hall Ballan, architect, 19 and 20, Baxter Gate, Doncaster. Quantities by Mr. Hoffman Wood, 14, Park Square, Leeds:—

| | |
|---|---|
| Sprakes & Sons | £645 |
| F. Beastall & Son | 570 |
| S. Beastall & Sons | 564 |
| E. Randerson | 428 |
| F. C. Close* | 405 |

* Accepted. [All of Doncaster.]

**Horwich (Lancs).**—For the sewering, levelling, paving, flagging, &c., of a number of private streets, for the Horwich Urban District Council. Mr. T. Green, surveyor:—

| | | | |
|---|---|---|---|
| W. Clarke, Manchester | £3,791 | 6 | 8 |
| E. Taylor, Blackpool | 3,133 | 16 | 1 |
| W. Pollitt & Co., Ltd, Bolton | 2,852 | 12 | 4 |
| W. J. Slater | 2,852 | 4 | 9 |
| T. Kilburn, Bolton | 2,836 | 0 | 1 |
| G. Baker | 2,811 | 6 | 2 |
| T. Hindley, Leigh | 2,802 | 2 | 11 |
| S. Cowburn & Sons, Hindley | 2,677 | 13 | 2 |
| J. & T. Finch | 2,675 | 16 | 8 |
| Webster & Whinstanley, Wigan | 2,651 | 17 | 4 |
| Chadwick Brothers, Blackburn | 2,613 | 2 | 2 |
| E. Yates* | 2,379 | 3 | 1 |

* Accepted. [Rest of Horwich.]

**Ilkeston.**—For proposed new Congregational Church and schools, Ilkeston. Mr. H. Tatham Sudbury, surveyor, 18, Market Place, Ilkeston:—

| | | | |
|---|---|---|---|
| A. Summerfield, Derby | £6,787 | 19 | 3 |
| A. Brown & Son, Derby | 6,570 | 0 | 0 |
| T. Fish & Sons, Nottingham | 6,491 | 0 | 0 |
| T. H. Beeson, Derby | 6,439 | 6 | 2 |
| W. Crane, Ltd., Nottingham | 6,437 | 0 | 0 |
| T. Whittaker, Nottingham | 6,400 | 0 | 0 |
| T. Barlow, Nottingham | 6,337 | 0 | 0 |
| J. Wright, Nottingham | 6,330 | 0 | 0 |
| L. Buxton, Ilkeston | 6,152 | 0 | 0 |
| A. Earnshaw,* East Street, Ilkeston | 6,112 | 10 | 0 |
| D. Roberts, Ilkeston | 5,759 | 19 | 0 |

* Accepted.

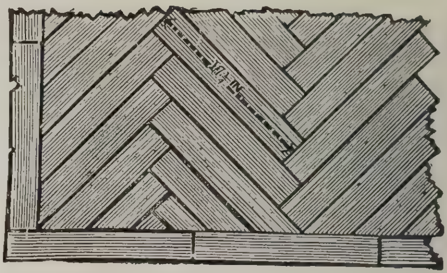
**Merthyr Tydfil.**—For rebuilding 105 and 106, High Street, Merthyr. Mr. C. M. Davies, architect, 112, High Street, Merthyr:—

| | | |
|---|---|---|
| J. Williams | £2,997 | 8 |
| J. Jenkins | 2,952 | 0 |
| Lloyd & Tape | 2,880 | 0 |
| L. Davies | 2,850 | 0 |
| E. Jones,* Dowlais | 2,650 | 0 |

* Accepted.

(*Continued on p.* xvi.)

FLOORING BLOCKS



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|---|---|---|---|
| | At Wharf. | ex Ship within one month. | At Wharf. |
| 17¼ × 3 × 3 | 12 9 | 12 0 | 16 6 |
| 17¼ × 3 × 2 | 8 3 | 7 9 | 11 5 |
| 17¼ × 3 × 1½ | 6 9 | 6 3 | 9 0 |

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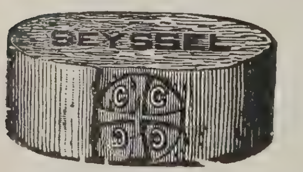

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Box Drawing Board, with strong lock and key, the lid being one of our well-known "Triplex" Drawing Boards, size 23 in. × 16 in. This is a most useful and necessary article for Students to keep their scales, instruments, etc., in.

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**5/6**

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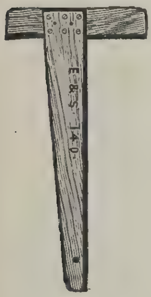
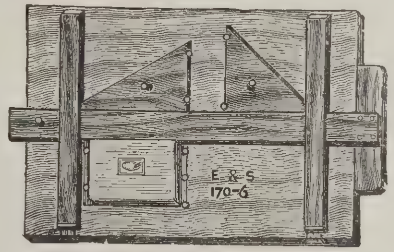


| | | Each. |
|---|---|---|
| No. 140. | 18-in. taper blade .. .. .. | 2/6 |
| | 24-in. " .. .. .. | 3/6 |
| | 31-in. " .. .. .. | 4/- |
| | 36-in. " .. .. .. | 4/6 |
| | 42-in. " .. .. .. | 5/3 |
| | 48-in. " .. .. .. | 6/- |
| | 54-in. " .. .. .. | 7/6 |

## The "Student's Own" Drawing Set.

**No. 170 B.**



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**7/6**

**The "Student's Own" Drawing Set,** comprising drawing board, 24-in. T-square, 2 large set squares, 12 drawing pins, and set of instruments in rosewood hook case, comprising 4½-in. brass divider, needle-pointed compass with pen and pencil points, bar, patent pencil point, box of leads, slip rule, and pencil holder.

### *This Pocket Case contains only London-made Instruments.*

Morocco pocket case, silk lined, electrum name plate in centre of lid, and lift-up flap, containing the following superior **German Silver** instruments:—Compass with double knee-joints and needle-points, pen and pencil points, lengthening bar, hair-spring divider, three needle-pointed spring bows, ink and pencil needle-pointed double knee-jointed bows, jointed ivory pen, steel do., ivory parallel, and plotting scale.

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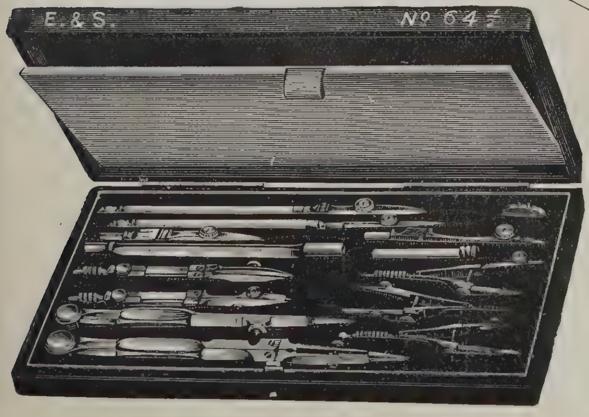

No. 63. Special neat leather snap case, silk lined, with lift-up flap inside lid. Contents: 6-in. **nut and bolt** *German silver* compass with *needle points,* steel-jointed, one knee-joint, deep hollow, lengthening bar, hinged pen point and pencil point, 5-in. round pointed divider to match, hinged ruling pen with pricker, 3 improved spring bows, with needle points and **nut and bolt** adjustment, case of leads and key ... each **31/6**

No. 64. Same as above, but spring bow pen and pencil replaced by **nut and bolt** hollow bows ... ... ... ... ... ... each **34/-**

No. 64½. Same as No. 63, but with sector-jointed compass, hair-spring divider, 2 bows, and 2 ruling pens (hinged) ... ... ... ... ... each **54/-**

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## TENDERS (*cont. from* p. xiv).

**Rhosgadfan (Wales).**—For the erection of a new Independent Chapel at Penyffridd, Rhosgadfan, near Carnarvon. Mr. Rowland Lloyd Jones, architect, 14, Market Street, Carnarvon:—

Chapel and schoolroom.

| | |
|---|---|
| Jones Brothers, Bontnewydd | £1,765 |
| W. J. Griffith, Carmel | 1,750 |
| W. Owen & S. Roberts, Pwllheli | 1,511 |
| W. & R. Jones, Pwllheli | 1.510 |
| D. Jones & Son, Rhostryfan | 1,450 |

Chapel only.

| | |
|---|---|
| Jones Brothers | 1,327 |
| W. J. Griffith | 1,300 |
| W. Owen & S. Roberts | 1,177 |
| W. & R. Jones | 1,160 |
| D. Jones & Son* | 1,150 |

* Accepted.

**Southend-on-Sea.**—For making up of the following streets: Gossett Street, Palmerston Road, The Lees, for the Corporation. Mr. E. J. Elford, M.I.M.E., borough surveyor:—

| | Gossett Street. | The Lees. | Palmerston Road. |
|---|---|---|---|
| D. T. Jackson, Barking | £649 | £1,242 | £1,065 |
| W. Iles, South Avenue, Southend | 633 | 1,115 | 985 |
| J. & J. Jones, Prittlewell | 625 | 1,190 | 1,040 |
| Summerfield, Tottenham | 584 | 1,041 | 912 |
| Buxton & Jenner,* North Road, Southend | 609 | 1,122 | 1,024 |
| [Surveyor's estimate | £590 | £1,100 7 10 | £992 5 3] |

* Accepted.

**Stourbridge.**—For the erection of a free library and technical institute upon a site fronting to Hagley Road and Church Street, for the Urban District Council, &c. Mr. Frederick Woodward, architect, Stourbridge:—

| | |
|---|---|
| A. Simmonds, Stourbridge | £10,150 |
| T. Rowbottom, Birmingham | 9,790 |
| J. Barnsley & Sons, Birmingham | 9,666 |
| W. Sapcote & Sons, Birmingham | 9,489 |
| G. Goodwin, Birmingham | 9,487 |
| J. & A. Brazier, Bromsgrove | 9,450 |
| H. Wilcock & Co., Wolverhampton | 9,360 |
| F. L. Jones, Wolverhampton | 9,162 |
| H. Dorse, Cradley Heath | 9,117 |
| W. Hopkins, Birmingham | 9,100 |
| Giles & Son, Small Heath | 8,995 |
| J. Mallin, West Bromwich | 8,990 |
| Dallow & Sons, Blackheath | 8,880 |
| C. Griffiths, Lye | 8,817 |
| Gowing & Ingram, Birmingham | 8,775 |
| Smith & Pitts, Birmingham | £8,750 |
| T. Hardy, West Bromwich | 8,640 |
| G. H. Marshall, Birmingham | 8.600 |
| Hadley & Son, Old Hill | 8,568 |
| A. H. Guest, Stourbridge | 8.472 |
| J. Guest & Sons,* Stourbridge | 8,440 |

* Accepted.

**Trowbridge (Wilts).**—For the construction of about 2,000 lineal yards of 21in., 18in. and 15in. stoneware and cast-iron pipe sewers, including river crossings, manholes, ventilating columns, and other appurtenant works, for the Trowbridge Urban District Council. Mr. H. G. Nicholson-Lailey, C.E., M.S.I., surveyor, Town Hall, Trowbridge:—

| | £ | s. | d. |
|---|---|---|---|
| R. H. B. Neal, Plymouth | £5,599 | 0 | 0 |
| J. & T. Binns, Croydon | 5,416 | 10 | 0 |
| Free & Son, Bristol | 5,310 | 16 | 6 |
| H. Roberts, West Bromwich | 5,067 | 8 | 0 |
| J. H. McDonald, Weston-super-Mare | 5,064 | 11 | 0 |
| B. Cook & Co., Westminster | 4,764 | 12 | 8 |
| J. Riley, Cheltenham | 4,377 | 3 | 0 |
| S. Wood, Bristol | 4,266 | 17 | 3 |
| E. H. Page, Cardiff | 3,980 | 3 | 0 |
| E. Ireland,* Sandylands, Morecambe | 3,734 | 2 | 6 |

* Accepted. [Engineer's estimate, £3,785 10s.]

**Witham (Essex).**—For the erection of an engine-house, engine foundations, boiler-house and seatings, coal stores, chimney shaft and water-tower, for the Witham Urban District Council. Mr. F. S. Courtney, engineer, 25, Victoria Street, S.W.:—

| | |
|---|---|
| W. Brown, Oldham | £2,550 |
| H. Windsor & Co, Clapham Junction | 2,306 |
| Smith & Son, Witham | 2,025 |
| M. Richards & Son, Witham | 2,007 |
| J. Hutchinson, Nottingham | 1,958 |
| E. West,* Chelmsford | 1,850 |

* Accepted.

---

**A new School at Inverurie** has been erected from designs by Mr. A. Marshall Mackenzie, of Aberdeen. Accommodation is provided for 670 children. The contractors were:—Masonwork, Mr. John Smith, Kintore; carpenter, Mr. John Watt, Inverurie; slater, Messrs. G. Currie & Company, Aberdeen; plasterers, Messrs. Roger & Baxter; plumbers, Messrs. James Laing & Sons, Inverurie; heating, do.; painters, Messrs. J. & S. Fyfe, Aberdeen.

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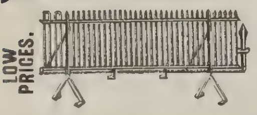
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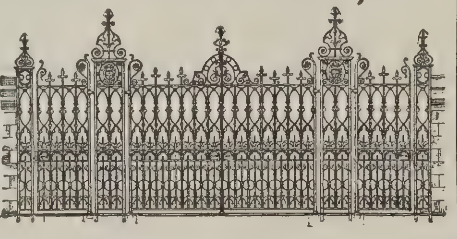

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H. HART, Drain & Chimney Cleansing Machine Manufacturer,
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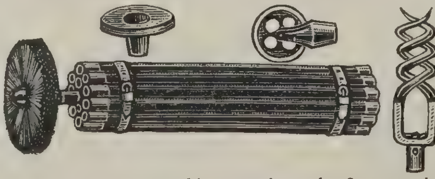

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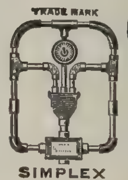

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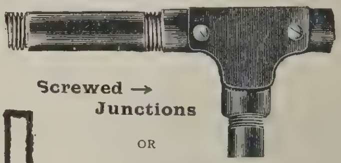

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# BUILDERS' JOURNAL

AND ARCHITECTURAL RECORD.

September 9, 1903. Vol. 18, No. 448. 9, East Harding Street, E.C.

**Architectural Additions to the S.K. Collection.** In a blue-book just issued by the Board of Education a list is given of the objects which have been acquired for the Victoria and Albert Museum during the past year. Among these are a carved stone mantelpiece from a seventeenth-century house at Norwich (£52 10s.); a carved oak ceiling, door, arch and details from a fifteenth-century house in Clare, Suffolk (£450); a seventeenth-century carved, painted and gilt screen from the church of a monastery in one of the Greek islands (£200); portion of an Hispano-Moresque frieze and beam-end (£40); a carved oak chimney front from Aix-la-Chapelle, dated 1538 (£30); a window of stained and painted glass by William of Marseilles from the cathedral of Cortona (£1,239); a collection of German tiles from the twelfth to the nineteenth century (£115); a panel of fifteenth-century tiles from the church of S. Maria della Verità, Viterbo (£105); a panel of stained and painted glass from Trèves, sixteenth-century (£50); a sketch-book of Samuel Prout, with 29 pages of sketches in Cornwall; 246 views of English cathedrals; 131 views of Winchester and neighbourhood; 21 photographs of Norman fonts in Norfolk; 176 photographs of rood screens, &c., principally in churches in Devonshire and Norfolk; 63 photographs of Saintes Cathedral. Among the gifts to the museum were—a bronze replica of Rodin's statue of St. John the Baptist (given by a committee of subscribers); two French and Spanish oak doors of the sixteenth century; a spandrel of Persian blue lustred tilework; a tempera painting by Albert Moore, "A Greek Play," formerly a frieze in the Queen's Theatre, Long Acre; and the first instalments of two fine series of photographs of sculptured Norman doorways and tympana in England by Mr. C. E. Keyser, F.S.A. The plaster reproductions acquired during 1902 include a ceiling from a house formerly in Great St. Helens, E.C., about 1600; a sepulchral monument of Jehan du Bos in Tournai Cathedral, dated 1463; the framework of a door in the church of S. Gertrude, Nivelles, eleventh century; tympanum of the door of a house at Ypres, dated 1564; tympanum of the sacristy door of the church of S. Servais, Maestricht, eleventh century; a series of spandrels in the chapel of the Counts of Flanders, in the church of Notre Dame at Courtrai, second half of the fourteenth century, and another series in the church of Notre Dame des Victoires, Brussels, about 1435; a series of brackets (*culs-de-lampe*) in the Hôtel de Ville, Brussels, fifteenth century; the central ambo of the rood screen of the church of Notre Dame at Walcourt, dated 1531; five terra-cotta firebacks, Flemish, sixteenth century; ten lockplates, Flemish, late fifteenth century; terra-cotta architectural details found in the churchyard of St. George the Martyr, Southwark, sixteenth century; and an unfinished circular medallion by Michelangelo Buonarroti, about 1504.

**The End of the Eiffel Tower.** Paris without the Eiffel Tower will be like Venice without the campanile of St. Mark; and the reminder that the great steel lattice is to be pulled down in 1910 comes with almost equal astonishment as the fall of the Venetian tower. The Parisian authorities, however, have a great improvement scheme in view and the Eiffel Tower stands in the way, so that when the concession expires seven years hence the work of demolition will be commenced, preparatory to the entire clearance of the Champ de Mars in order that it may be laid out as a park, and the southern bank of the Seine brought into the regulated order of the city. It is only recently that the ground has been ceded by the State to the city. The present aspect of the site occupied by the last great exhibition is certainly untidy. The pulling down of the remaining galleries still continues, leaving debris and barrenness behind. We shall not regret to see the last of the Palais d'Eau et d'Electricité, but the great tower that stands ahead of it, that wonderful creation of the French engineer, has so taken a place among the wonders of the world that its loss will be universally deplored. Nobody who has stood under those great legs and looked up at the mass of seeming filigree can have failed to appreciate the art it displays. It is essentially a creation of to-day; it has its own lines of construction; it is like nothing else that ever was; it towers up, a leviathan of iron webs, amidst the Lilliputian piles of brick and stone. Yet the admiration for the Eiffel Tower now so general was by no means expressed when the scheme was begun. On the contrary, a chorus of disapproval was raised, culminating, under the leadership of M. Alphand, Director-General of Works, in the protest signed by such men as Messonier, Gounod, Garnier, Sardou, Dumas and Bouguereau—the lights of art and letters in France. "We wish—authors, painters, sculptors, architects, enthusiastic lovers of beauty, which has hitherto been respected in Paris—to protest with all our energy, and with all the indignation of which we are capable, in the name of art and of French history now menaced, against the erection in the heart of our capital of the useless and monstrous Eiffel Tower, which public satire, often full of good sense and a spirit of justice, has already christened the Tower of Babel. . . Is the city of Paris to permit itself to be deformed by monstrosities, by the mercantile dreams of a maker of machinery; to be disfigured for ever and to be dishonoured? . . . . this tower dominating Paris, like a gigantic and black factory chimney . . . . stretching out like a black blot, the odious shadow of the odious column built of riveted iron plates." That the tower has outlived such criticism needs no telling. And there is reason to think that it will be looked back upon with esteem by posterity.

**Student Decorations.** The suggestion that the students at the Royal College of Art should be allowed to carry out the decoration of some of our new public buildings, under the direction of their eminent professors, is one which deserves a trial, in view of the success of their efforts on Westminster Bridge at the time of the Coronation. The college possesses in Prof. Beresford Pite, Professor Lanteri, Professor Lethaby and Professor Moira four very able men, thoroughly representative of the living force in architecture, sculpture, design and decorative painting. Under their direction, the most competent of the students might safely be allowed at least a trial with some decorative scheme for a public building. There is no question of taking commissions from those who make a living out of such work; to some the experiment might prove a burden; but this should not prejudice the larger question of the incentive which such an experiment offers. In this country we have very few examples of an ordered decorative scheme carried out in a public building, though the topic is dear to the heart of all architectural congresses. We should like, therefore, to see what these students might produce under the direct superintendence of their professors. In Mr. Aston Webb's extension to South Kensington Museum there may be an excellent opportunity.

**The late Mr. Brooker.** The property conveyed under the will of the late Mr. James William Brooker, architect and surveyor, of Southwark and Sevenoaks, has been sworn at £114,254. Mr. Brooker's father was for many years employed by the late Metropolitan Board of Works, and executed the shoring of dangerous structures under the Metropolitan Building Act on a schedule of prices.

# MEN WHO BUILD.

## No. 70.—PAUL WATERHOUSE, M.A., F.R.I.B.A.

MR. PAUL WATERHOUSE, son of Mr. Alfred Waterhouse, R.A., was born at Fallowfield, near Manchester, on October 29th, 1861, his mother being the daughter of John Hodgkin, barrister. He was educated at Hawtrey's School, Slough, at Eton (where he reached the sixth form), and at Balliol College, Oxford, where he steered his college eight and was captain of his college boat club. In 1884 he secured a classical degree with honours (second-class). Immediately on leaving college he entered his father's office as a pupil and applied himself to the passing of the Institute examination. He was the second-best student of his year, and was awarded a prize of books, the Ashpitel prize going to Mr. Stelfox, of Manchester. In 1887 he had won the Essay prize of the Institute with a paper on pediments and gables. In 1891 Mr. Paul Waterhouse became his father's partner, and the association lasted till the autumn of 1901, when Mr. Alfred Waterhouse's serious illness compelled his abandonment of work. During the partnership, Mr. Paul Waterhouse was engaged partly on works which were exclusively his own design, partly in the superintendence of his father's work, and partly in the joint execution of works which were joint designs. Among the works of the partnership were several offices for the Prudential Assurance Co., of which the branches at Sheffield and Huddersfield were specially under Mr. Paul Waterhouse's charge. Offices for the same company at Plymouth, Southampton and Hull were begun during the partnership, and have been continued under Mr. Paul Waterhouse's sole charge. The reconstruction of the Atlas offices in Cheapside, the rearrangement of the Grosvenor Hotel and similar works at the Grand Hotel were carried out very largely under the younger architect's guidance.

Mr. Paul Waterhouse has been very intimately connected with the hospital work of the office in New Cavendish Street. The rebuilding of University College Hospital, London, and the new buildings of St. Mary's Hospital at Manchester have been left in his hands since the retirement of his father, and he is personally responsible for a great part of the new buildings at the Nottingham General Hospital, and exclusively for the new operating theatres at the Liverpool Infirmary. He has long been associated with the buildings at Girton College. Many of these were, of course, begun much before he commenced practice, but the latest additions—the hall, the chapel and the two new groups of students' rooms—have been erected partly from his designs and mainly under his superintendence.

At Owens College, Manchester, he had to bring to a conclusion the works undertaken during the partnership, and naturally this has implied something of design as well as of superintendence; indeed, Mr. Paul Waterhouse has had a close connection with the details of the Owens College work, and is at present engaged on additions to the chemical laboratories in Burlington Street. He designed the Leather Industries building at the Yorkshire College, Leeds.

At the Liverpool University College he has been entrusted since his father's retirement with the extension of the medical school buildings, the earlier portions of which were erected during or before the partnership.

Besides the local Prudential Assurance offices already mentioned, Mr. Paul Waterhouse is at present engaged in completing the main office on Holborn, a work which involves a considerable amount of original design in interior finishings of various kinds. He is further engaged on designs for an extension of the company's offices in Liverpool, and for new premises under the same ownership at Brighton. He was also in charge for the same company of the completion of Staple Inn Buildings, a new Block of offices adjoining Holborn.

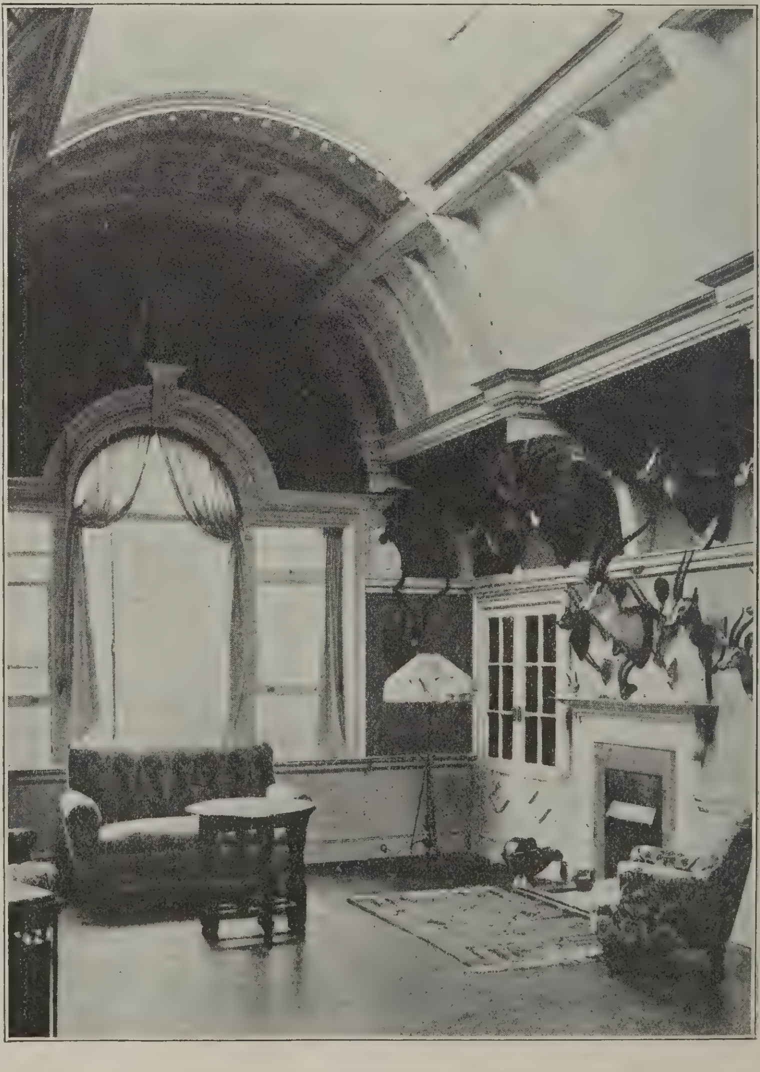
Among the more entirely independent designs of Mr. Paul Waterhouse may be mentioned the Mary Pease almshouses, Darlington; bacteriological laboratories for the Jenner Institute of Preventive Medicine at Aldenham, Herts; domestic work (additions) at Tongswood Hawkhurst, Birch Hall, Essex; Knighton, Buckhurst Hill; 39, Phillimore Gardens; and various alterations at Mollington Hall, Cheshire, recently completed. Some small houses at Stanmore are also of his erection.

He has designed pulpits for St. Paul's Church, Great Portland Street, and for Theydon Bois Church, Essex.

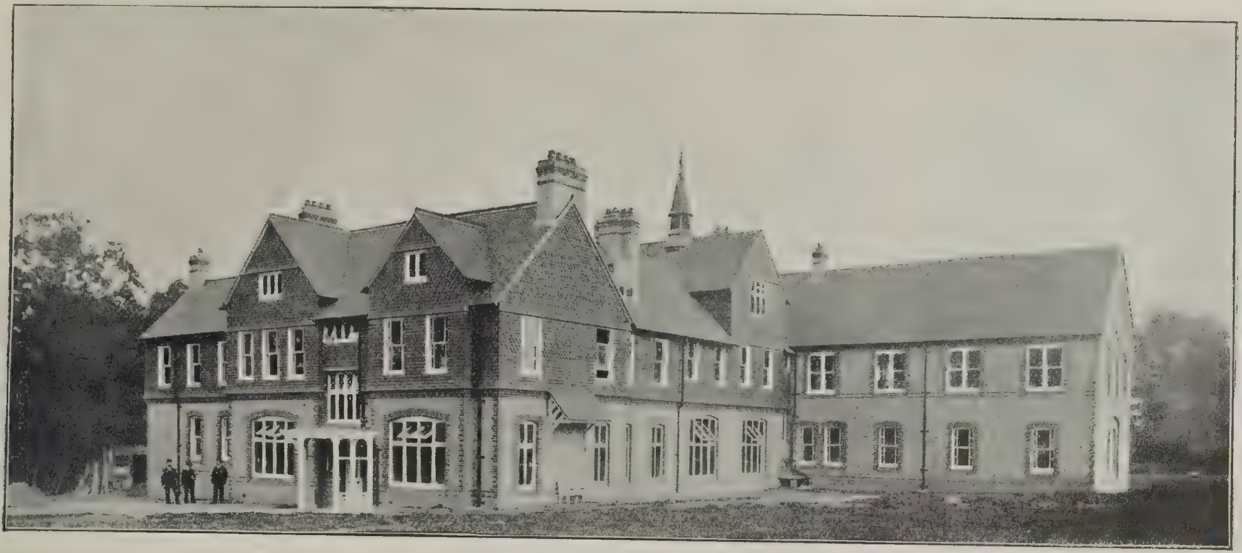
Last year he completed a settlement house for the Maurice Hostel in Hoxton (illustrated in the BUILDERS' JOURNAL for September 10th, 1902), and is at present engaged on a house at Mount Melville, St. Andrews (for Mr. James Younger), which was begun under the partnership. The considerable garden works at this building are exclusively from his design, in connection with which, it might be mentioned, he indulged a personal hobby by the composition of some Latin sundial mottoes.

Mr. Paul Waterhouse has had some experience of school designing. He was associated with his father in the erection of the St. Margaret's (Clergy Orphan) School at Bushey and the Leighton Park School at Reading.

It has naturally happened that Mr. Waterhouse has had his share of the prose as well as the poetry of architecture. Sanitary science (to say nothing of the burden of party-wall and "light and air" work which falls to



KNIGHTON, BUCKHURST HILL, ESSEX.



MASTER'S HOUSE, LEIGHTON PARK SCHOOL, READING.

every Londoner) has had its claims upon him, and the whole of the drainage of Eaton Hall was, some years ago, remodelled and modernised under his supervision and direction.

For several years past he has been a frequent writer on architectural subjects. Reviews or articles of his production occur in many of the Institute volumes, and he has contributed articles to the Edinburgh, Monthly and Architectural Reviews. For the last he wrote a monograph on Pugin and an essay on Vitruvius. He wrote the lives of several architects for the Dictionary of National Biography, including those of Pearson, Scott, Street, Butterfield and the three Pugins. He was associated with Dr. Sanday's recent book on the sacred sites of the Gospels, and supplied the monograph (with drawings) on Herod's Temple at Jerusalem. To Macmillan's "Guide to Italy" he supplied the introductory essay on Italian architecture.

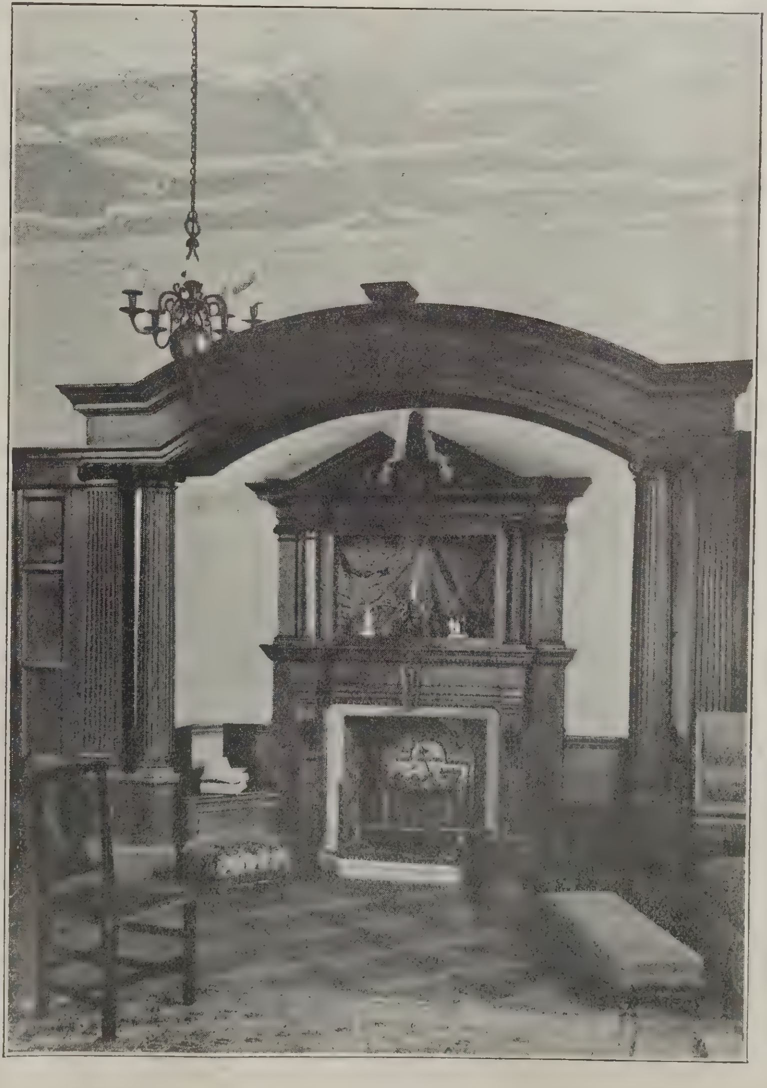
He sat continuously for twelve years on the Council of the R.I.B.A., and has, until recently, taken an active share in the examinations.

In 1887 he married Lucy Grace, daughter of Sir Reginald Palgrave, K.C.B., and has three children. Mr. Waterhouse is interested in choral singing, and, besides being a member of the "Magpies" and of the Plainsong Society, is on the committee of the recently reorganized Bach Choir.

The accompanying illustrations serve to show the character of his architectural work. Mr. Waterhouse is not a conventionalist nor altogether a modern; rather he occupies a mid-position, holding fast to the authority of classicism, yet seeking expression in a modern spirit; not bound by stereotyped "Orders" but respecting the canons of design they have established; not carried away by the fetish of originality, but recognizing the fact that individuality gives a living pleasure which mere copyism can never give. Such a middle course we should like to see followed by the majority of architects in England to-day. People make too much of being original, with the result that their strivings lead them into absurdities and affectations. They fancy there is in their souls a heaven of architecture, whereas it is no more than a workaday world. And so they end.

As a critic of architecture Ruskin is not to be followed implicitly. Concealed in his divine language are many fallacies. He wrote: "A man who has the gift will take up any style that is going, the style of his day, and will work in that, and make every thing that he does in it look as fresh as if every thought of it had just come down from heaven. I do not say that he will not take liberties with his materials, or with his rules: I do not say that strange changes will not sometimes be wrought by his efforts, or his fancies, in both. But those changes will be instructive, natural, facile, though sometimes marvellous; they will never be sought after as things necessary to his dignity or to his independence, and those liberties will be like the liberties that a great speaker takes with the language, not a defiance of its rules for the sake of singularity; but inevitable, uncalculated and brilliant consequences of an effort to express what the language, without such infraction, could not."

There is fallacy to be found in such an assertion as this, but it nevertheless contains a transcendent maxim—that a great man can never ignore the past; he may not be bound by it, but he respects it, and out of that respect grows admiration for what great artists have done, an admiration which, joined to the gift of individuality, creates new works in a disciplined and ordered manner.



FIREPLACE IN BILLIARD-ROOM, BIRCH HALL, THEYDON BOIS, ESSEX.

BIRCH HALL.

## FIRE-RESISTANT WOOD.

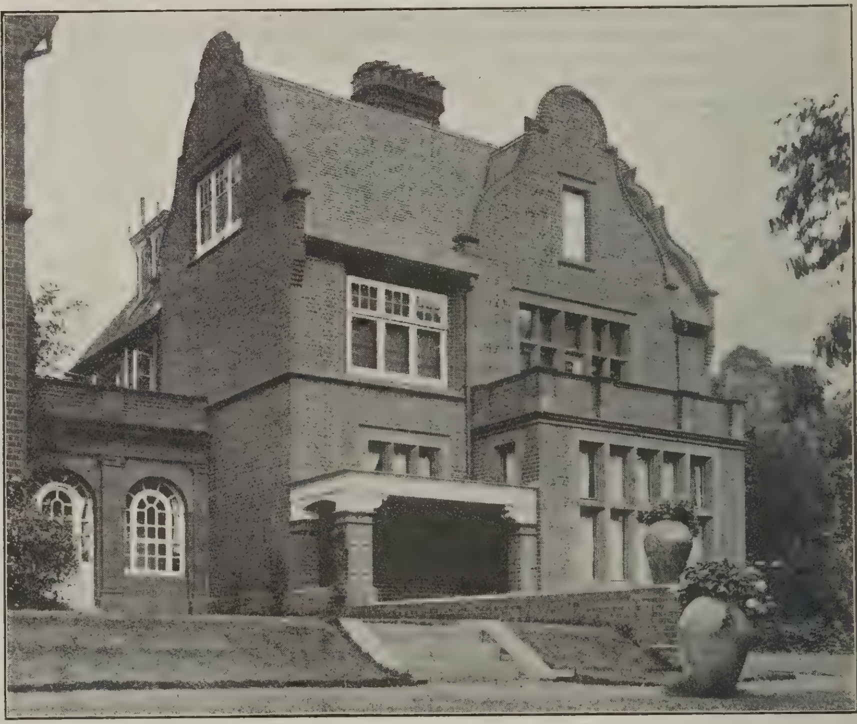
### SOME TESTS.

By a curious coincidence, on the same day that the paper on non-flammable wood by Mr. Joseph L. Ferrell appeared in our columns—last Wednesday—a two-column letter was published in the "Times" by Mr. R. Moor dealing with the processes which have been patented by Mr. Ferrell in thirty countries. In the course of his letter Mr. Moor describes some tests which, as an independent investigator, he conducted with the treated wood. He says:—

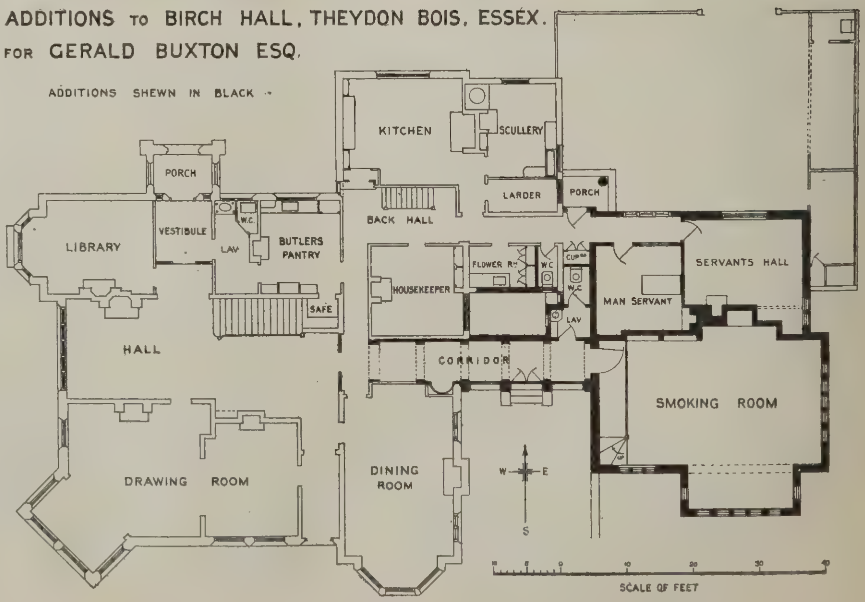
The timbers for which I actually prepared solutions and which I personally treated consisted of sixteen pieces of various sizes of 1in. planking and three ties of various dimensions. The time occupied in thoroughly saturating the pieces of planking in mechanical apparatus under the requisite pressure (the normal saturating pressure of each and every kind of timber having been determined by exhaustive experiments, and found to vary between 300lbs. and 600lbs.) was one hour, at the end of which I found the saturation to be absolute. The three ties treated by mechanical process with preservative solutions were allowed fifteen, nineteen and fifteen minutes respectively under pressures of 400lbs., 500lbs. and 500lbs. respectively. The saturation in all three cases I found to be practically absolute. The planking treated consisted of white pine, red oak, ash, poplar, yellow pine; and the ties of well-seasoned white pine, red oak and ash. In all cases careful measurements, weights, &c., were taken to determine the percentage of absorption, &c., and thence to calculate the cost of chemicals, &c. I also prepared the solution for "filler" and "surface coating," and treated timber therewith, afterwards testing it. The time necessary for treatment by these processes should be noted, for, as far as I can learn, there is no existing process in use by which timber can be treated in less than thirty hours.

The timber I actually tested consisted of samples of that treated by me, and other samples similarly treated; also of untreated timber and several samples of wood treated by existing fireproof wood companies, in order to make general comparisons and to obtain data. The samples I had treated were not thoroughly dry, and when exposed to heat and flame gave off some steam in evaporating the water of solution; but in other respects they gave substantially the same results as other timber similarly treated which had been thoroughly dried out. The timber tested was in all cases of 1in. planking, and the Bunsen burner, which generates a temperature vouched by Lord Kelvin of 2,462 degs. Fahr., was used. (Note.—The ordinary gas-burner generates 542 degs. Fahr. only, and the observed and recorded temperature of great conflagrations is said not to exceed 1,650 degs. Fahr.) The flame of the Bunsen burner is steady and constant, whereas the accidental flame of conflagration is variable, wavering and not continuously concentrated on one point. The plain untreated timber took fire at once, and succumbed in from twenty-five to thirty-five minutes, being in such state as to convey fire during the whole period. The timber treated by so-called fireproof wood companies withstood flame, but eventually succumbed in from sixty to seventy minutes, being, during the latter part of the time, in a state to communicate flame. The samples treated by Ferrell processes, by saturation, and those dressed with "filler" and "surface coating," withstood disintegration for 480 to 500 minutes, and were fire-resistant during the entire period.

The question of cost of treatment is only second to that of efficacy. As far as I have been able to ascertain, the cost of actual chemicals for existing methods is high in comparison with the cost of substances employed for solutions in the Ferrell processes, and the cost of actual treatment is fractional in the Ferrell processes compared with that of others. This altogether apart from the question of the actual efficacy of the solutions employed and of the methods of application.



ADDITIONS TO BIRCH HALL, THEYDON BOIS, ESSEX.
FOR GERALD BUXTON ESQ.



GROUND-FLOOR PLAN. PAUL WATERHOUSE, ARCHITECT.

NEW ENTRANCE, NOTTINGHAM GENERAL HOSPITAL; WITH OPEN-AIR WARD ABOVE.

## ROYAL COLLEGE OF ART.

It is gratifying to find that in every branch of the work done in the Royal College of Art good progress is reported, and there are not wanting proofs that the present curriculum is well calculated to carry out the object for which the college was founded, namely, the training of art teachers and craftsmen who will one day take part in leading the taste of the country in matters of art. The principal of the college, Mr. A. Spencer, reports that the students are deriving great benefit from the provision which has been made for literary instruction and for lectures upon history and mythology, especially in connection with decorative and ornamental art. During the past session there were 183 students at the college, as compared with 210 during the previous session.

*School of Architecture.*—Forty-four students passed through the lower architectural school and six through the upper school. In the former a course of lectures was given by Prof. Pite showing the relation of plan to elevation, the growth and development of beautiful form and detail, and the general principles governing design of a purely decorative or monumental character. Measured drawings were made by the students of five architectural subjects in the museum which were selected as being most suitable for constructive drawings; attention being specially directed to jointing and methods of workmanship.

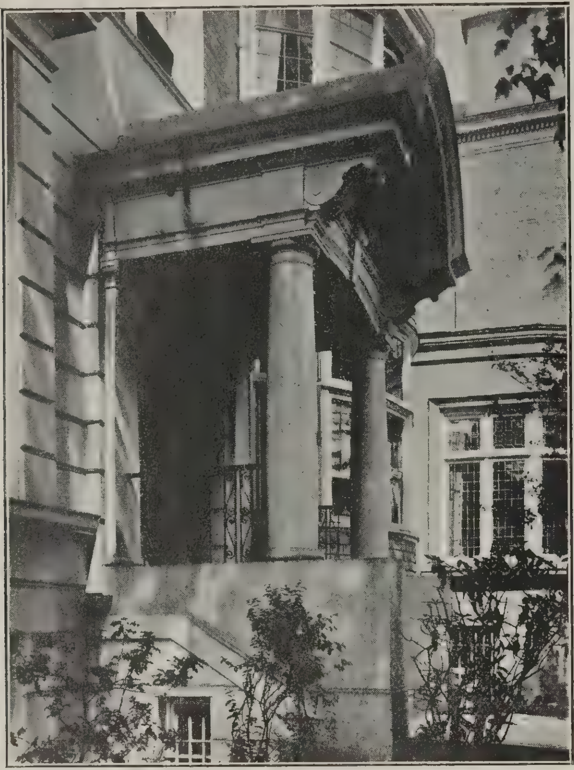
As regards design, simple subjects, such as a small cottage or a village inn, were selected with the view of familiarizing students with elementary problems of construction and planning, and with the proper use of materials. Photographs and measured drawings of selected examples were supplied to the students from which sketch notes were systematically taken, and these, together with measured studies in the museum, provided the material and basis for their design. Without this system, students having little or no previous architectural training would have been compelled to rely on their own untutored ideas in designing their work. The students of the upper school, having already completed an elementary course, specialize in the architectural school and study in full and necessary detail the problems of planning and arrangement, and of technical building construction. The leading features and construction of Classic, Gothic and Renaissance architecture are taught by reference to well-known buildings characteristic of the periods, which were visited by the class accompanied by the professor. Buildings in course of erection were also studied in order that the professor might explain the modern methods of construction.

*School of Design.*—Sixty students passed through the lower school and fifty-three through the upper school. The students of the lower school have, for the most part, already passed through the school of architecture, and the knowledge gained there has proved a sound basis for the instruction given in the school of design. The proficiency in draughtsmanship was especially marked, and, under the direction of Prof. Lethaby, produced excellent results. The work in the demonstration classes was supplemented by constant reference to the beautiful examples in the art museum, and to the birds and beasts of the Natural History Museum, as also by the study of flowers and foliage. In this way each student becomes possessed of a well-equipped folio of sketches to serve as elements which he may subsequently employ in his original designs. In the upper school it has been found that the practical demonstrations in certain selected branches of artistic craftsmanship have been of great value in making the course more real throughout, and a few weeks devoted to these crafts are found to exert much influence upon the paper work of the students. In the general design course, the work done in the demonstration classes is supplemented by frequent reference to the examples in the art museum and by constant practice in original designing for given purposes. Each student is advised, while following the general course, to specialize in some particular branch of design, as, for instance, in textiles, furniture, metal-work, &c., with the hope that in this specific study—aided by his practical work and with the advantages offered by the museum—he may make himself a thoroughly practical designer in one particular branch of art. So far there is every reason to be satisfied with the results of this practice, and many of the students have become expert designers.

*School of Decorative Painting.*—Thirty-five students passed through the lower school and sixty-one through the upper school. This year, for the first time in the history of the college, full-size cartoons have been executed with a decorative intention and for a definite position, the architectural surroundings of the composition being considered. As a whole the results have been somewhat disappointing, and this, no doubt, is partly due to the small scale upon which students have hitherto been accustomed to work. The drawing of a figure life-size has proved a formidable task, apart from the difficulties of composition. In individual cases, however, remarkable progress has been made. Encouraging results have been produced in the lower school in each of the branches of study pursued—drawing from the antique and the life, painting in monochrome, and figure composition. In the upper school the work will doubtless undergo a considerable change for the better as soon as students from the lower school pass into it.

*Modelling School.* — Nineteen students entered the lower school and thirty-four the

ENTRANCE HALL, NOTTINGHAM GENERAL HOSPITAL. PAUL WATERHOUSE, ARCHITECT.

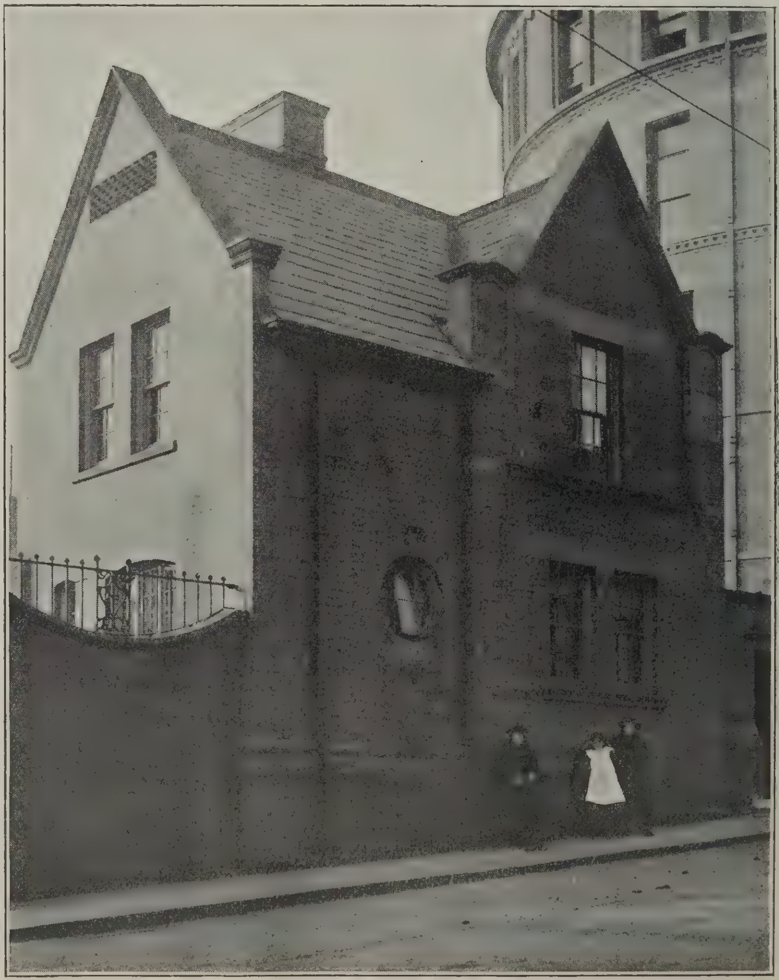


ADDITIONS TO A HOUSE IN PHILLIMORE GARDENS, LONDON, W. PAUL WATERHOUSE, ARCHITECT.

upper school. This school is made up of those students who have already passed through the other schools, the training in which has greatly influenced their ideas of decorative as contrasted with purely pictorial art. The subjects dealt with during the session are the armature of the bust and figure, anatomy from the round, treatment of various reliefs, and simple figure composition. The unbroken traditions which the upper school has enjoyed under Professor Lanteri, and the removal of the limit to the size of works to be executed by the students, account for the excellence of the work done. In the life school figures approaching life-size have been executed with a view to their occupying some position in a scheme of decoration. Figure compositions have been given once a fortnight, and the more successful studies have been carried out on a large scale. These compositions have always been chosen with a view to their use in some architectural decorative scheme, such as for pediments, friezes, &c. The students, working under such conditions, become imbued with the sense of fitness and proportion which is absolutely necessary to them as craftsmen. Professor Lanteri considered that there was a great need for instruction in history and mythology similar to that given in the École des Beaux-Arts, Paris. This has now been provided for by the lectures already referred to. The practical utility of the instruction given in the modelling school has been greatly enhanced by the institution of the class for marble and stone carving. The decoration of Westminster Bridge for the Coronation by students of the college afforded an opportunity such as is seldom available for the carrying out of decorative designs on a large scale, and for the combined efforts of the four schools upon one scheme of decoration. The experience acquired in this undertaking suggests that it would be of advantage to have important schemes of decoration of a permanent character in some of our public buildings carried out, under the direction of the professors, by students who have completed their course of training.

In his report on the architectural school Mr. T. G. Jackson, R.A., says:—The difficulties which face the instructors in architecture are perhaps greater than those which are encountered elsewhere in the college. Except in the case of those who specialize in architecture, the time passed by students in this school is too short for the acquisition of more than a very rudimentary knowledge of the subject, and among those who have specialized only one student has had more than a year in this branch of the school. None of the students have knowledge enough to enable them to make their own plans; in most cases both plan and section have to be given them by the professor, and in very few cases has the student ventured to depart from the professor's suggestions. As the new scheme begins to tell on the curriculum no doubt more students will specialize, and the number of those who attain some power of original design will increase, and work of a higher kind may be looked for. I am glad, however, to hear from my colleagues that they can trace distinctly in the work of their respective schools the effect which the training in the architectural school has had in stiffening and giving a robuster quality to their students' work, and in impressing on them the value of constructional lines and disposition of mass in decorative design. It is in this way that at present, at all events, the architectural school will be mainly useful to the students of the Royal College. Returning to the subjects set for design in this school, I think that some of those chosen are perhaps rather too difficult for the students in their present stage, and that simpler subjects would do them more good.

In his report on the design school Mr. Walter Crane says:—The work of the students shows very remarkable progress, and reaches a high standard of accomplishment. The courses of study under Professor Lethaby are calculated to bear most usefully upon the practical work of designers as well as instructors in the school of design. It is, indeed, difficult to speak too highly of the progress made and the general standard of accomplishment reached in the different kinds of work and design studied in this school. The advantage of the careful nature-study in plant, form and structure, and colour-studies of flowers, birds and butterflies, is evident, and the influence of controlling and directing taste in the choice of examples in the museum no less so. The study of heraldry, again, bears most usefully upon the training and resources of a decorative designer, and the attention given in this school to the best types of heraldic design should have an excellent effect on work of this kind, which enters so largely into decorative art of all kinds. . . . . . The various examples from the craft-classes again showed that serious work was being done—the stained and painted glass being particularly good. It is impossible to overrate the value of these classes either to the practical designer or teacher, and it is to be hoped that means will be found for extending the classes so as to include other important crafts.



LOWER LODGE, NOTTINGHAM GENERAL HOSPITAL. PAUL WATERHOUSE, ARCHITECT.

# Views and Reviews.

### Municipal Engineers' Examinations.

This book is a reprint of the model answers to examination questions published in the "Surveyor and Municipal and County Engineer." They are of particular value to students preparing for the examination of the Incorporated Association of Municipal and County Engineers, which examination is now becoming generally recognized as indispensable to all who wish to qualify as municipal engineers. As stated in the preface, it is not suggested that the book should take the place of recognized text-books, but it provides useful summaries of various subjects and indicates how different types of questions may be answered. The answers cover the four examinations held between September, 1900, and October, 1901. In future the Association will only publish sample questions selected from various examinations, not the questions set at every forthcoming examination.

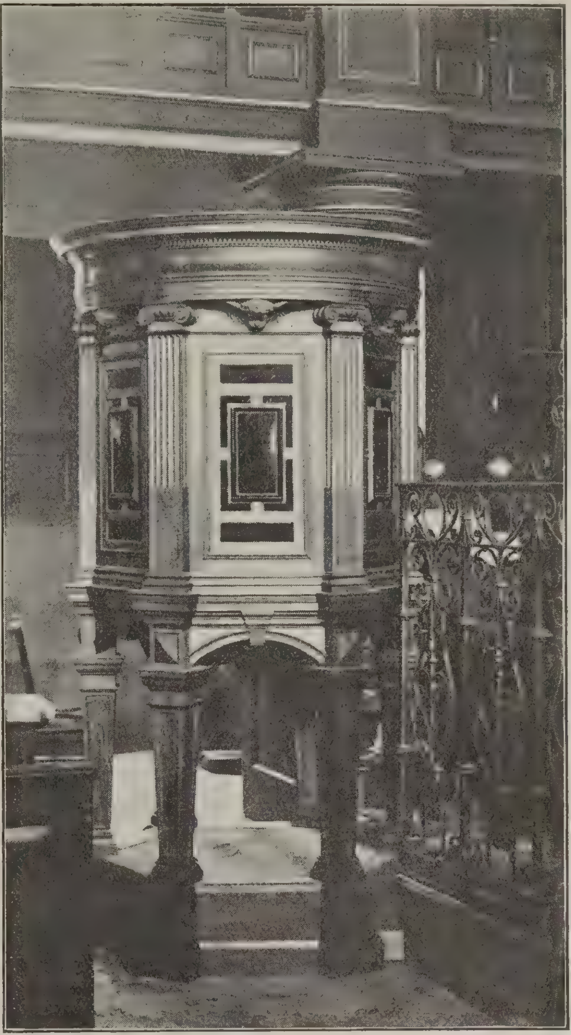
The book is of a handy size and clearly illustrated.

"Municipal Engineering." London: St. Bride's Press, Ltd., 24, Bride Lane, Fleet Street, E.C., price 3s. 6d. nett.

### Allen's Building Construction.

We cannot recommend this new edition. It is far from being "practical" as stated in the title. It is no improvement on the former editions, though their defects were ample. The additions are small ones, being confined to such matters as ferro-concrete construction, electric lighting, Warren trusses, heating systems, &c., the very things which might have been left till the chief matters had been efficiently dealt with. The great endeavour seems to have been to entail as few alterations to the pages as possible, so as to save expense to the publishers; but that is not the way to keep a book up-to-date and make it a continued asset to the firm. The illustrations, as we have said before, are to a large scale and appear at a glance very clear and practical, but upon close inspection are found quite the opposite, exhibiting great slovenliness and a want of practical knowledge. We pointed out errors before, and these are still uncorrected. All the books published on building construction suffer from the fact that they are compiled to meet the requirements of certain examinations, *i.e.*, are collections of scattered items of knowledge, and have no system, no method in them. This edition does not deserve any further consideration on our part.

"Practical Building Construction" by John Parnell Allen. Fourth Edition. London: Crosby Lockwood & Son, 7, Stationers' Hall Court, Ludgate Hill, E.C., price 7s. 6d. nett.



PULPIT, ST. PAUL'S CHURCH, GREAT PORTLAND STREET. LONDON, W. PAUL WATERHOUSE, ARCHITECT.

SUMMER HOUSE, MOUNT MELVILLE, ST. ANDREWS. PAUL WATERHOUSE, ARCHITECT.

### The Compleat Carpenter and Joiner.

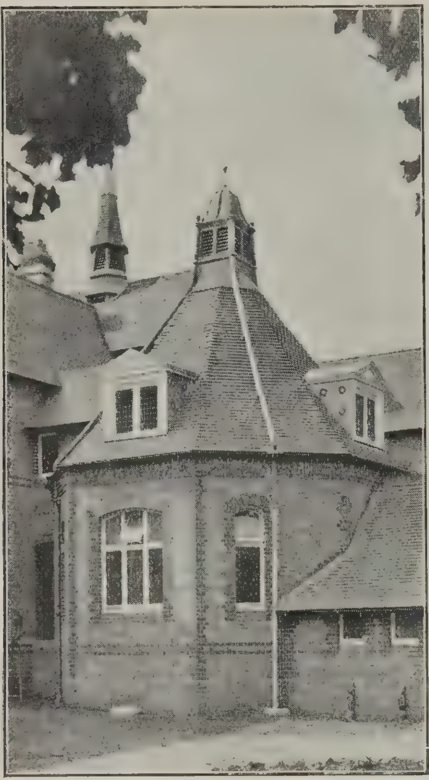
Divisional Volume V. of this large undertaking continues the carpentry section; it comprises chapters on the delineation, design and construction of roofs, and floors and ceilings. This volume is written by the editor, and is an improvement on his other contributions to the work, but we find a certain looseness in the treatment, nothing being quite clearly explained and the want of a thorough grasp of the subject often betrayed. The book strikes one more as a collection of hints and examples rather than a methodical treatise. The section of roof-planning, for instance, contains many illustrations of particular kinds of roofs, but no attempt is made to bring them into any sort of order, and the accuracy of many of the statements seems doubtful. The author falls into a common error when he says: "Except in strictly utilitarian structures, the pitch of roofs will as a rule be governed by taste and style, rather than by climate and materials. No one would dream of covering a church erected in the Greek style with a high-pitched roof like that of a thirteenth-century Gothic cathedral. . . . . It is probable that the slopes of roofs were regulated originally according to the materials used as a covering." The words "taste" and "style" we find again productive of mischief. Taste is worth very little consideration because it depends on association, and is of no avail against logical argument; style is simply the outcome of conditions, *i.e.*, fitness or utility. The shape of a roof depends partly on the materials, partly on the climate and situation, and on the shape and dimensions of the building. The last are generally the chief reasons for the pitch or form of a roof, for where several roofs of different widths run into each other one pitch will be found most suitable for some of them, so that the ridges may be in the best positions for simplicity in construction. The other roofs will have their pitches governed accordingly, exactly as they themselves govern the main roof. The ultimate form should be the best considering the circumstances, and we see no opportunity for taste or other questions that betray an ignorance of practical conditions, so characteristic of those who pride themselves on being "artists." We are surprised to see in a book of this class such an illogical, impractical, ugly roof as Fig. 746 on p. 37. It is greatly to be regretted that the plates should not be placed facing the pages on which they are described, instead of being spaced at equal intervals; indeed, we find descriptions applying to plates published in the previous volume. This is inexcusable. The student should not have to search for parts of the information like this, and it is destructive of clearness when one has to keep turning back to look at the illustrations.

"The Modern Carpenter Joiner and Cabinet Maker," Vol. V. Edited by G. Lester Sutcliffe, A.R.I.B.A. London: The Gresham Publishing Co., 34, Southampton Street, Strand, W.C., price 7s. 6d.

### Heat

This is a very good text-book on heat. It is written most clearly, and every student should be able to understand it. The author has thoroughly mastered the art of lucid demonstration, and he has not obscured the scheme of the book with numerous examples and exercises, as is done in most books. He also uses elementary mathematics only, confining calculations to separate sections in smaller type at the end of each chapter. The advantage of this arrangement is apparent, but we regret that the general formulæ and the demonstration of them were not printed in clearer type, and black type used to distinguish any very special fact or formula that should be remembered. The book contains full descriptions of numerous experiments with diagrams, and some account has been given of recent experimental work bearing on the subject discussed. We are very glad to see special chapters devoted to graphic methods which make facts so much clearer in every field of science. The subjects of thermo-dynamics, radiation and critical state are treated at length, and special chapters are also given on thermometry and pyrometry, and the liquefaction of gases.

"The Higher Text-book of Heat." by R. Wallace Stewart, D.Sc. London: W. B. Clive, University Tutorial Press, Ltd., 157, Drury Lane W.C., price 6s. 6d.



AN ATTEMPT TO SOLVE THE VENTILATION-PIPE DIFFICULTY.

## ROYAL NAVAL COLLEGE, DARTMOUTH.

THE new Royal Naval College at Dartmouth (of which Mr. Aston Webb, R.A., is the architect) has now advanced a long way towards completion, in preparation for delivery to the Admiralty in November, 1904. The buildings rise from a granite plinth and are constructed of red Bracknell bricks with Portland-stone dressings; Bath stone is used internally, and there is a considerable quantity of Torquay limestone. Upon entering, the visitor traverses the hall and is soon made acquainted with the excellent plan. A great vaulted corridor, lined with enamelled brick of a pleasant greyish-green tone, runs almost from end to end of the building, giving access to every part. It extends 350ft. in either direction, and is the artery of all communications. Beneath it is a subway, in which will be all the electric-light wires and the pipes for water supply, heating purposes and sanitation.

Down at Sand Quay, by the river, where the old gymnasium and fives-courts are, and where the new engineering shops will be built, are the electric-power station, the boiler-house, the pumping station for the college and the reservoir on the hill.

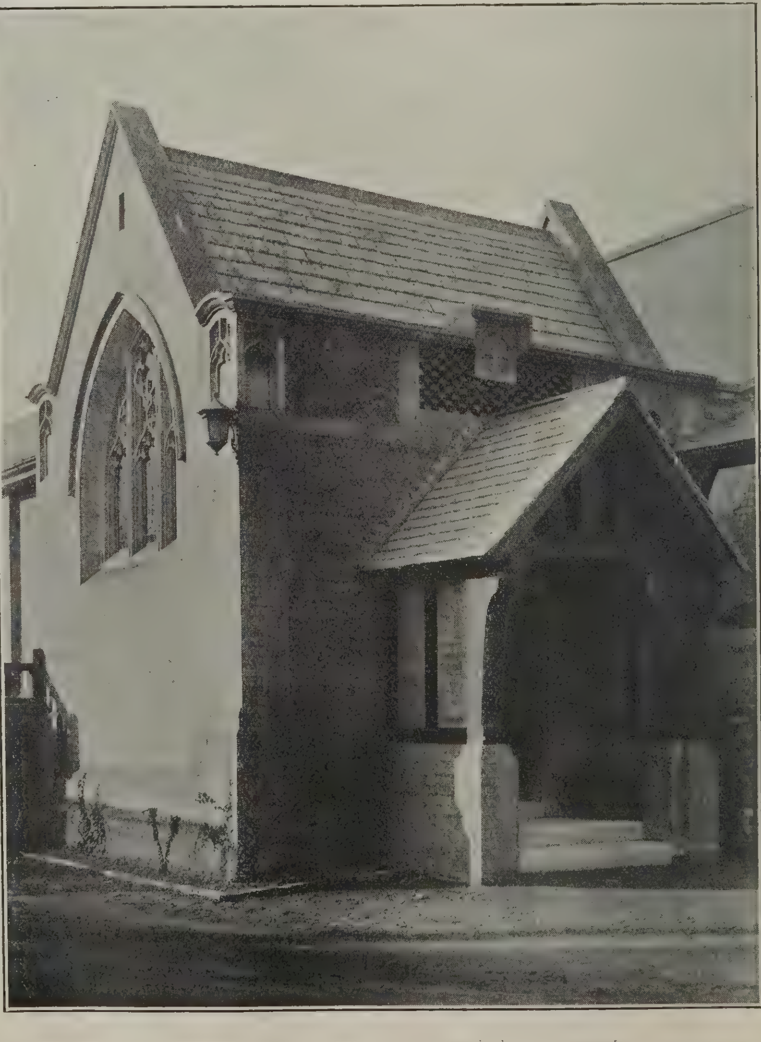
Between the long corridor which has been mentioned and the external façade of the new building are the four day-rooms for the cadets, each 50ft. long and 21ft. wide. It should be explained that the college has been built to accommodate the cadets of the four terms which are to be spent at Dartmouth—unless, as seems likely, bungalows of the Osborne type should be added for a fifth term—and each of these day-rooms, like the dormitories over them, is assigned to the cadets of a particular term. The dormitories are 14ft. high and allow about 1,000 cub. ft. of air for each cadet. It was originally proposed that the youths should sleep in hammocks, thus making early acquaintance with the conditions of life afloat, but it has been decided quite recently that bedsteads shall be provided.

The day-rooms and dormitories of the cadets are all on the garden front of the college, looking towards the river, while the classrooms lie on the other side of the corridor. The great hall is approached from the main entrance by crossing the corridor, to which it stands at right angles. When completed it will be a noble apartment, 88ft. long by 52ft. wide, with an open roof of Californian redwood. On either side are the classrooms, 22ft. by 18ft., upon two levels, the upper ones approached from the gallery, while behind lies the seamanship room, 52ft. by 42ft. These parts are as yet unfinished. Other blocks which stand out from the corridor in the rear of the college will contain sanitary and changing rooms, plunge and slipper baths.

At the east end of the building, on the right as one faces the college, is the captain's house. Behind it will rise the roof of the chapel, which will accommodate 350 persons. Closely adjacent is the cadets' assembly-room. The block of buildings corresponding to the chapel and the captain's house situated in the other wing of the building, to the west, comprises the great dining hall for the cadets and the officers' quarters. The dining hall is approaching completion and has already received the segmental arches of its plaster ceiling, with the adornment of the royal arms, the crown and the cipher, and other devices. It is an imposing chamber, finely panelled in oak. About it are disposed the kitchens and store- and service-rooms, while behind are the quarters for the "ship's company." Upon the garden front lie the ward-room, the officers' dining- and billiard-rooms, and some other apartments, all spacious, though for economy it appears to have been decided to panel the ward-room with grained deal. Evidences of economy appear in other parts of the building, which should not, perhaps, be surprising, since so much more money was spent on the foundations than was expected, owing to the unsatisfactory nature of the ground. There are niches for statues of the great admirals near the entrance to the large hall, which may for some time remain vacant. It may be hoped that the Admiralty will furnish the college in a manner corresponding with the dignity of the structure.

Every precaution is taken against fire. The floors are of wood blocks on concrete, the walls are of brick, and the ceilings and groinings of plaster on expanded steel lathing. Hydrants are in every part of the structure, and there will be a salt-water reservoir on the hill, which will also serve the purpose of a swimming-bath.

It remains to speak of the hospital, which is an epitome of the latest hospital practice, and the utmost credit is due to Dr. May for the admirable completeness of its arrangements. Something, it is true, remains to be desired. The building stands at the extreme south-western extremity of the property, and between it and the road lies a strip of land which should certainly be secured, lest cottages or small houses be built there, as seems to be threatened. The operating theatre has walls of Marmorite and a terrazzo floor. A long corridor brings the visitor to the non-infectious block, opposite to which are the kitchens. The accommodation on two floors is for twenty-four patients, eight of them being in separate rooms, with ample ventilation, excellent arrangements for heating, solid oak furniture, beds of the best hospital type, marble-top bedside tables, bed rests and other fittings. In the two infectious blocks forty-four patients can be accommodated.—(Extracted from the "Times.")



MORTUARY, NOTTINGHAM GENERAL HOSPITAL. PAUL WATERHOUSE, ARCHITECT.

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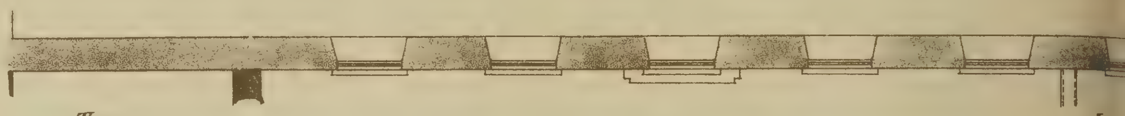
*Supplement to*
The Builders' Journal and Architectural Record,
*Wednesday, September 9th, 1903.*

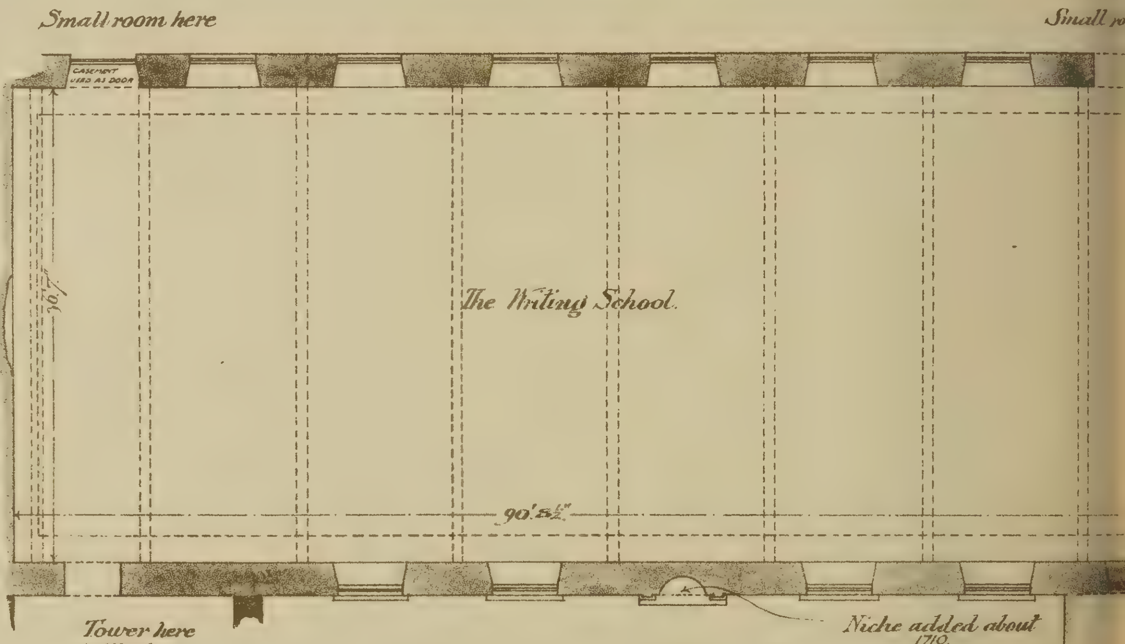
# CHRIST'S HOSPITAL NEWGA
# WRITING SCHOOL

OPENED IN 1695 DEMOLISHED IN 190

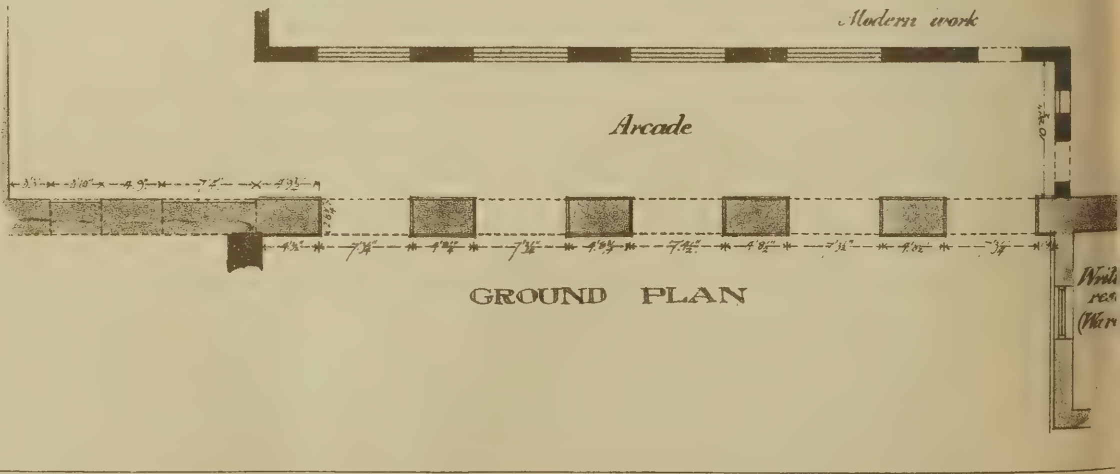
SCALE OF 10 0 10 20 30 40 50 60 FEET



PLAN AT LEVEL C.D.



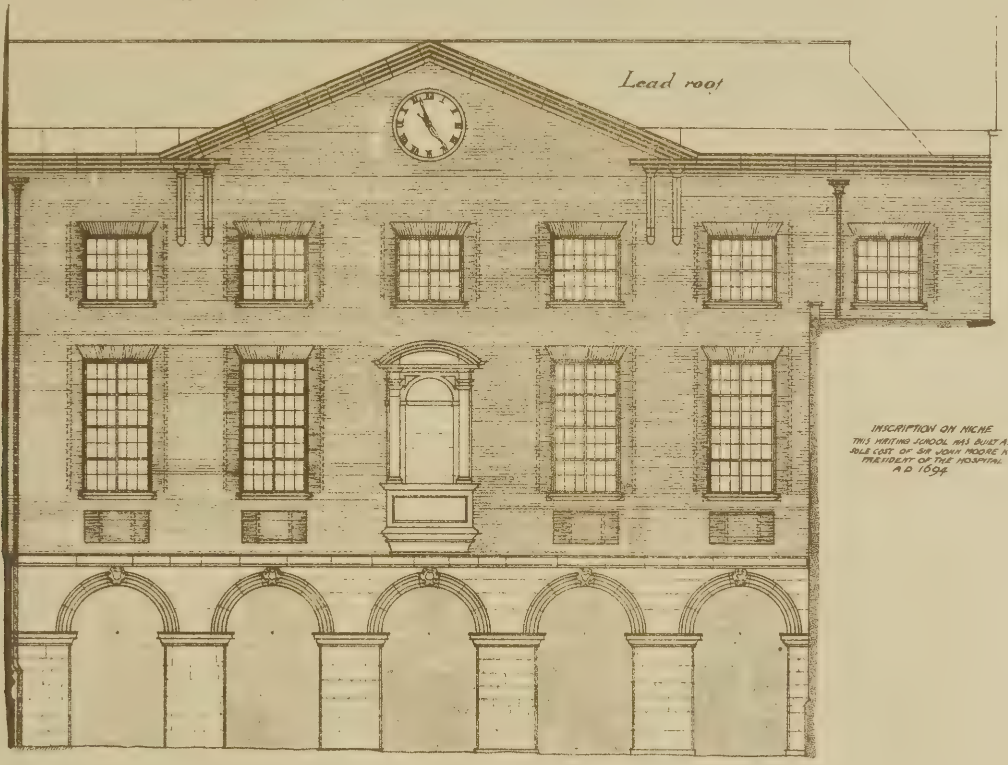
PLAN AT LEVEL A.B.



GROUND PLAN

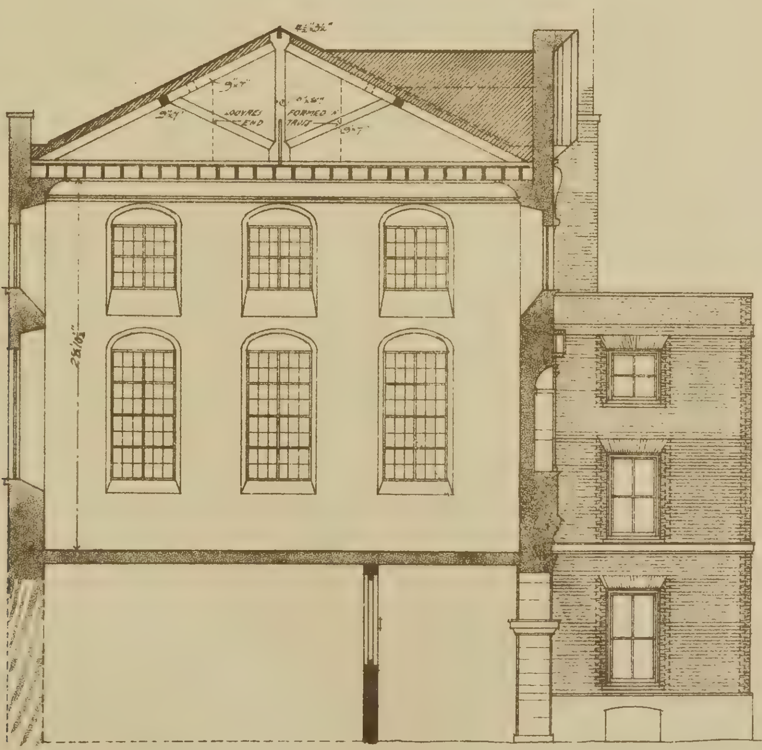
MEASURED AND DRAW

# E STREET.



INSCRIPTION ON NICHE
THIS WRITING SCHOOL WAS BUILT AT THE
SOLE COST OF SIR JOHN MOORE KNT AND ALDN
PRESIDENT OF THE HOSPITAL
A D 1694

ELEVATION.



SECTION

FREDERICK C. WYLDE.

"INK-PHOTO." R. J EVERETT & SONS, 56 LUDGATE HILL, E C

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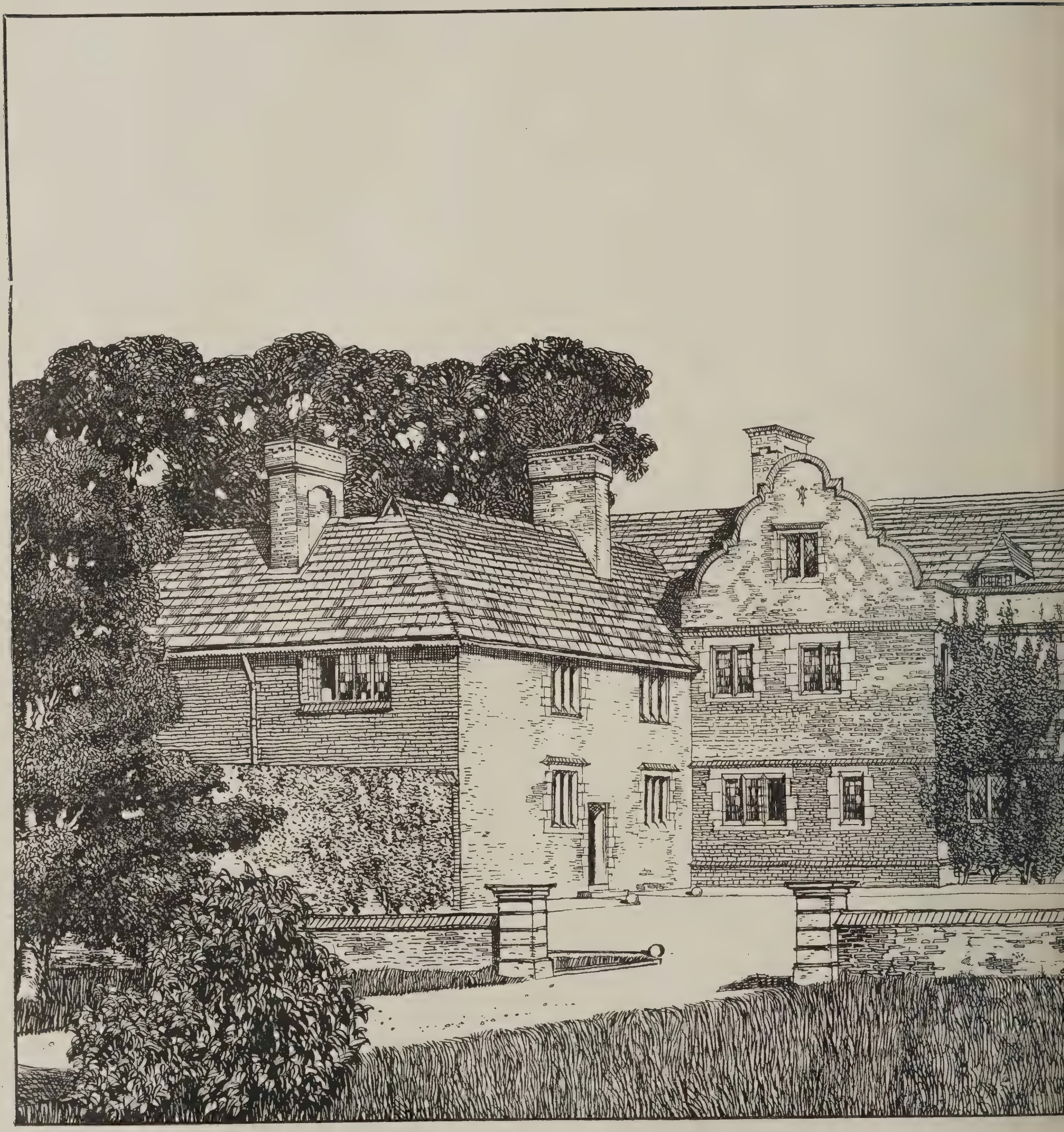
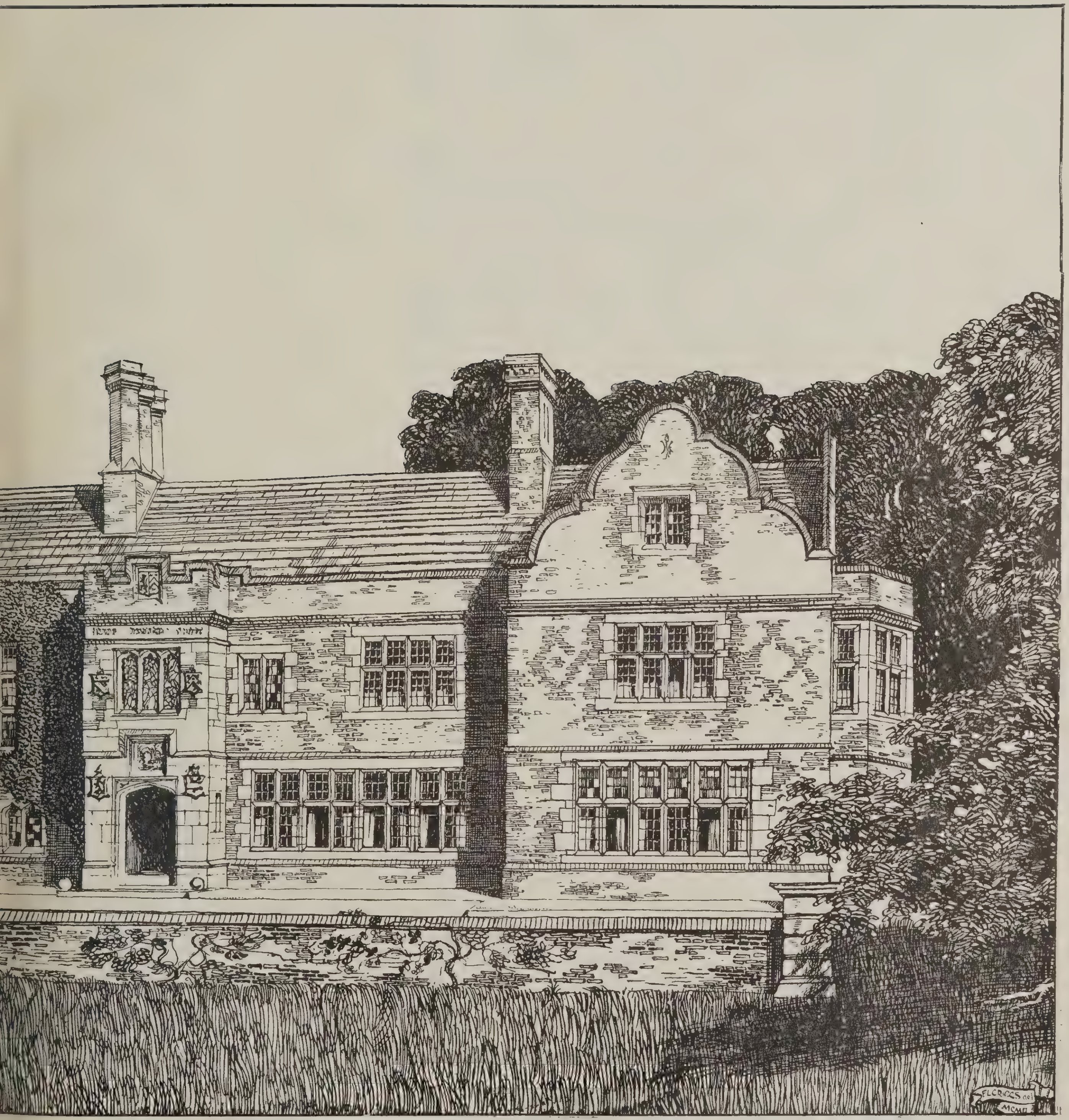
*Wednesday, September 9th*, 1903.



THORPE UNDERWOOD HALL, YORKSHIRE: ENTR



FRONT. WALTER H. BRIERLEY, ARCHITECT.

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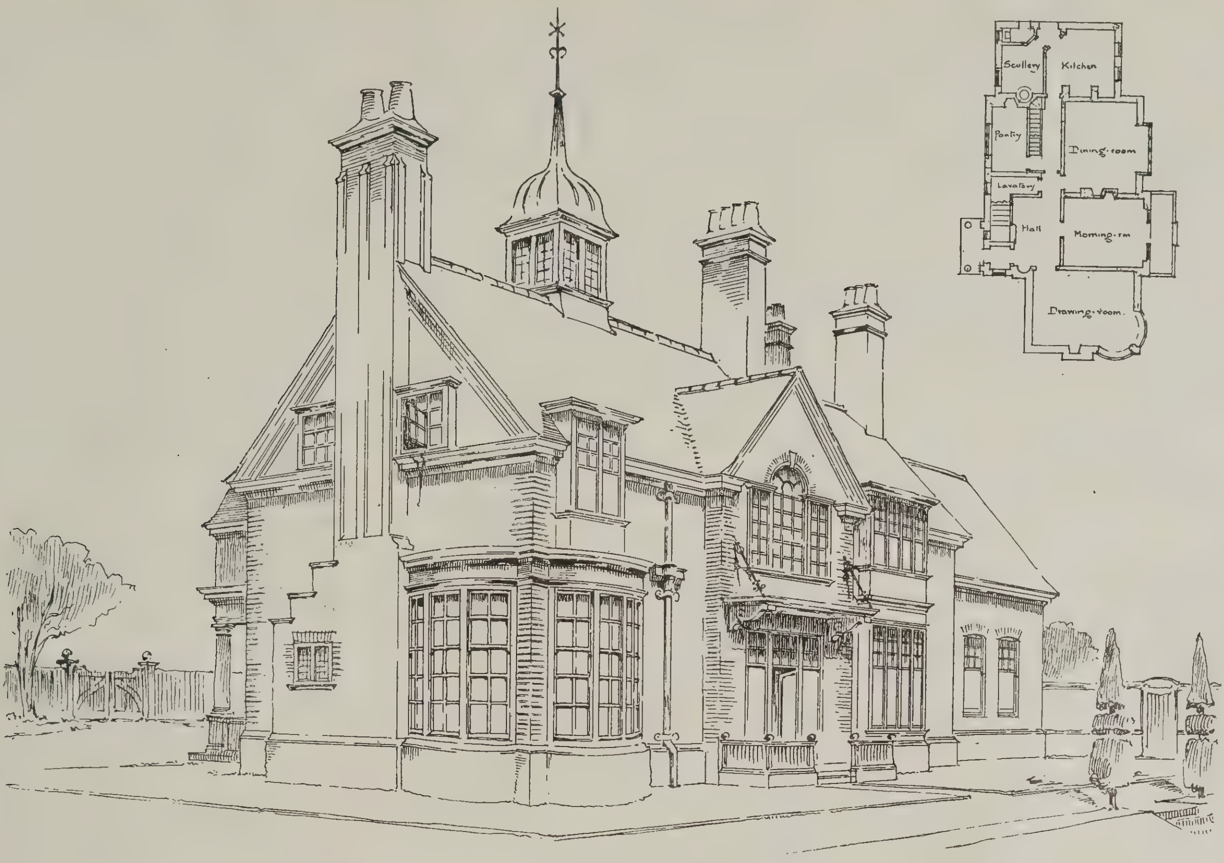
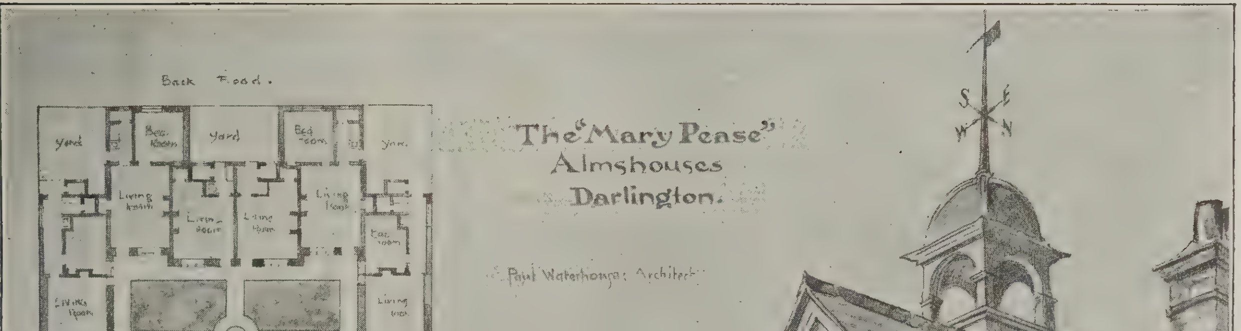


LYNBROOK, STANMORE, MIDDLESEX. PAUL WATERHOUSE, ARCHITECT.



# Keystones.

**L.C.C. School of Photo-Engraving and Lithography.** — The ninth session of this school (6, Bolt Court, Fleet Street) will commence on Monday, September 28th.

**"Austria in London"** will be the Earl's Court Exhibition of 1905. The organization is in the hands of Mr. W. Höfler and Mr. P. C. Javal (the latter is about to take over the management of the Earl's Court Exhibition).

**The London Drawing and Tracing Office** (98, Gray's Inn Road, W.C.) has just issued a booklet giving specimens of work done there — perspectives, tracings, sun prints, lithographed quantities and specifications, models of buildings, &c.

**Liverpool Cathedral.**—Efforts are being made to induce the King to visit Liverpool next April and lay the foundation-stone of the cathedral. The Diocesan Committee, who have £175,000 in hand, are striving to increase that sum to £200,000, which is the limit they have decided upon before the stone is laid.

**The new Greyfriars Parish Church at Aberdeen**, forming part of the splendid pile of buildings on the grounds of Marischal College, was dedicated and opened last week. Mr. A. Marshall Mackenzie, A.R.S.A. was the architect. The church is divided into nave, aisle and chancel, and has a gallery at the west end under the tower. The cost has been £18,467.

**Bo'ness Academy**, which has just been completed at a cost of £7,000, takes the place of the Anderson Academy, which two years ago was practically condemned by H.M. inspectors as unsuitable for the purposes of higher education. The new academy provides accommodation for 360 scholars. All the classrooms open from a central hall 48ft. by 22ft. Mr. Alexander Cullen, of Hamilton, was the architect.

**Royal Engineers' War Memorial.**—It has been decided to abandon the proposal to incorporate in the Royal Engineers' memorial to the officers and men who fell in the South African War the four large figures of typical Boers presented to Lord Kitchener —originally intended to adorn a memorial to President Kruger in the square at Pretoria. The monument will take the form of a memorial arch, which will be erected in front of the Royal Engineer Institute at Chatham.

**Glasgow School of Art.**—The prospectus for 1903-04 has just been issued. Last year there were 120 architectural students out of a total of 702. An exhibition of students' work will be held in the Royal Glasgow Institute of the Fine Arts from November 3rd to 16th. A scheme of instruction to be commenced this session in the continuation classes of the Glasgow School Board has been agreed upon between the Board and the School of Art. Particulars of the scheme are given in a pamphlet which has been sent to us by the instructor, Mr. D. Bennet Dobson, architect.

**Liverpool School of Architecture and Applied Art.**—The prospectus for the session 1903-4 shows that the school now consists of (1) architectural studio, (2) sculpture and modelling studio, (3) drawing and painting studio, (4) decorative design, stained glass and enamelling studios, (5) metal-working workshop, and (6) wood-carving workshop. Both day and evening classes are held, the objects being (1) to effect a complete union between the different arts and crafts; (2) to establish a thorough course of training for students in the different arts, especially in architecture, sculpture and decorative design; and (3) to provide special instruction of an advanced kind for skilled craftsmen and artizans, chiefly in those crafts allied to architecture.

**Mr. T. E. Collcutt** has taken Mr. Stanley H. Hamp into partnership.

**The new Midland Hotel at Manchester,** described and illustrated in THE BUILDERS' JOURNAL for May 20th last, was opened last week.

**A Hospital for Infectious Diseases at Stonehaven** has just been completed. It is built on the cottage system. The architects were Messrs. Brown & Watt, of Aberdeen.

**Theatrical Furniture.**—Messrs. Oetzmann & Co., of Hampstead Road, W., have supplied the furniture for Mr. H. V. Esmond's play, "Billy's Little Love Affair," produced at the Criterion Theatre on Wednesday, September 2nd.

**A Mechanics' Institute at Pontardulais** is to be erected at a cost of about £3,000. An open competition was recently advertised. The selected design is by Mr. W. Beddoe Rees, A.R.I.B.A., 37, St. Mary Street, Cardiff, who was awarded the premium of £10 10s.

**The Chancel of Bangor Cathedral** was reopened last week after complete renovation. For many years it presented an appearance discreditable to the cathedral, damp having ruined the frescoes. The whole of the old fresco work has been faithfully reproduced by the artists of Messrs. Clayton & Bell, London.

**A Handbook on Southport** has been prepared in connection with the British Association meeting, which begins to-day. It contains a considerable amount of information about the history, meteorology, physiography, flora, fauna and antiquities of the town and district not before published. Among the four editors we notice the name of Mr. F. H. Cheetham, a frequent contributor to our columns.

**The curiously-designed Church at Loudwater,** built in 1788, is being restored at a cost of about £1,000. The name of the edifice is unknown. Outwardly it resembles a paper mill, while internally it is not unlike the cabin of an old-fashioned ship. The church was erected by a papermaker and his wife, who were impressed with the great need there was for a place of worship in the village. The church will be given a more ecclesiastical appearance.

**The Architectural Association Curricula for 1903-04** has just been issued. The winter term commences on September 28th. Mr. Hugh Stannus will lecture on Greek and Roman architecture in place of Mr. Baggallay. In the remodelled premises at Tufton Street the museum, library, reading-room, members' common-room and staff offices will be on the ground floor, the evening school classrooms and studios on the first and second floors, and the day school studios on the third floor. The following papers will be read before the Association during the forthcoming session:—October 2nd. President's address, distribution of prizes. October 16th, "The Day School in relation to Architectural Pupilage," by Mr. Arthur T. Bolton and Mr. Hugh P. G. Maule. November 6th, "Modern Churches," by Mr. C. A. Nicholson. November 20th, "Farm Buildings," by Mr. H. M. Cautley. December 4th, "Photography for Architects," by the A.A. Camera and Cycling Club December 18th, "Old Stucco and Plaster Work, with reference to Modern Possibilities," by Mr. G. P. Bankart. January 8th, "Egyptian Architecture," by Mr. Hugh Stannus. January 22nd, "As to the making of Architects, with Examples of Draughtsmanship," by Mr. Maurice B. Adams. February 5th, "Cottage Homes," by Mr. W. A. Harvey. February 19th, "Corner Houses," by Mr. W. Henry White. March 4th, "Schools," by Mr. John W. Simpson. April 22nd, "Craftsmanship," by Mr. W. Gilbert. May 6th, "The value of Science in an Architectural Curriculum," by Mr. A. E. Munby.

**Liverpool Pierhead Baths.**—Seven well-known architects are now preparing pencil drawings of the new baths proposed to be erected at the Pierhead, St. George's Dock, Liverpool.

**The City Temple** has been entirely refurbished. One of the principal features in the re-decoration has been the uncovering of the bottom portion of the pulpit presented by the Corporation of London in 1874. For many years this has been hidden by an unsightly platform. A much-needed improvement in the ventilation has been effected. An entirely fresh system of heating has also been provided. Electric light has been substituted for gas, and the power is supplied by two companies so as to provide against failure. The work has been carried out at a cost of £6,000.

**Manchester Society of Architects.**—Ten of the members of this Society visited Ashbourne, Derbyshire, on August 15th. Almost continuous rain prevented much outdoor sketching; fortunately the interior is very interesting, including some good Early English windows and Decorated work, and some fine tombs. The curiously irregular transeptal plan, with chapels, gives some very picturesque vistas internally, and a long day's sketching proved all too short. On the evening of August 25th fifteen members visited Parr's Bank, Spring Gardens, Manchester, by the kindness of Messrs. C. Heathcote & Sons, the architects.

# Obituary.

**Mr. Edward Richards,** architect, of Torquay, died recently at the age of sixty-one.

**The late Mr. Whistler's Estate** has been valued at £10,602 gross, including £9,948 of nett personalty.

**Mr George Brinton,** partner in the firm of Brinton & Bone, builders, of Southampton, died last week at the age of fifty-six years.

**The late Mr. J. H. Hancock,** timber merchant, of Newcastle-on-Tyne, left an estate which has been valued at £37,901 gross, including £35,240 nett personalty.

**Mr. Herbert Ford, F.R.I.B.A.,** died at his residence, Homeleigh, South Row, Blackheath, last Tuesday week at the age of seventy, after a short illness. He practised in the City as an architect for upwards of forty years. Mr. Ford, who was a Liveryman of the Fruiterers' Company and a member of Cripplegate Ward Club, was well-known as an expert in the designing of warehouses particularly adapted to the Manchester and allied trades. Indeed, he is credited with being responsible for designing and superintending the erection of upwards of 400 such warehouses alone, not to mention the plans for schools, private residences, chapels, &c., that emanated from his active brain. In later years Mr. Ford was associated as partner with Mr. W. J. Burrows, and to the firm was entrusted the carrying out of such important blocks of buildings as Messrs. Pawson & Leafs and Messrs. J. Howell & Co., St. Paul's Churchyard; Messrs. J. Rotherham & Co.'s premises in Shoreditch; Messrs. Stapley & Smith's factory at Hackney, and extensive alterations to their London Wall premises; large blocks of offices in Cheapside, Milk Street, Aldermanbury, Holborn and Southampton Row; intricate alterations to the Phœnix Assurance Company's premises in Lombard Street: the restoration of twelve warehouses demolished by the great Cripplegate fire; and lastly, several blocks of schools. Most of the buildings above mentioned, it may be stated, involved complex questions of party-walls, boundaries and ancient lights. The business will be carried on in future under the same style as before, namely, Ford, Son & Burrows, architects and surveyors, 21, Aldermanbury, by the surviving partner, Mr. W. J. Burrows, F.R.I.B.A.

# ROOFING SHOPS WHILE WORK IS PROCEEDING.[*]

**By R. H. FOWLER, M.I.M.E.**

At the Steam Plough Works, Leeds, it became necessary to put roofs on the boiler shop and the adjoining fettling shop. The former was divided into two bays, each 50ft. wide by about 270ft. long, and the latter was also 50ft. wide by about 280ft. long. Fig 1 shows the old roofs and Fig. 2 the new. As practically the whole output of the works depended on the supply of boilers, it was an absolute necessity that work in the boiler shop should be carried on without any stoppage. It was therefore impossible to adopt any plan of raising the parts of the new roof from the floor inside the shop. Another important consideration was that the men working in the shops should be in absolute security, and should feel that they were so, during the operations. It was therefore decided to deal with one bay at a time and to construct a platform over the old roof for the full length of the shop, and to make this platform of sufficient strength to carry the tackle required in fixing the roof and also the girders for carrying the roof, and to transfer this platform to the other two bays in succession.

The two shops are practically closed in on three sides, leaving only one end from which the work could be conducted. Here a steam derrick to lift 4 tons was fixed, this derrick being of sufficient height to place all the material for the roofs on to the platform, and with a jib of sufficient length to place the first girder for carrying the platform in position. At the opposite end to this girder the first piece of platform was carried on an old brick wall of the shop. When this girder was fixed, the first piece of the platform was erected, on which the cranes (to be described further on) could be worked. The first bay of the boiler shop to be dealt with necessitated a row of stanchions on each side, and as these had to be fixed in such positions as would not interfere with the existing walls and columns, the width of the shops had to be slightly altered. All the stanchions were made in two pieces for convenience of erection. To erect them, holes were made through the old roofs, and each stanchion was lifted by a single pole, the power for lifting being obtained from a winding forward drum on a traction engine. In this way all the stanchions were put up during meal times. When those for one bay were in position, the next operation was to fix the crane and roof girders. To accomplish this a travelling crane, shown at Fig. 3, was constructed with an overhanging jib of sufficient length to carry the girders, 25ft. long, when suspended from the centre, from stanchion to stanchion. This travelling crane was mounted on a railway of 8ft. 6in. gauge, and sufficiently high above the platform to allow a narrow-gauge railway to run under it, on which the roof girders and crane girders were moved along on specially constructed lorries; and as the platform could not be constructed of sufficient width to allow this crane to be over the centres of the girders, it had to be made with a movable jib, as shown on the plan. As soon as a pair of girders, one on each side of the shop, were fixed, the trussed beams for carrying the platform were placed in position by means of a somewhat rough but very useful movable jib crane, consisting simply of two baulks of timber mounted on some old traction wheels, with a small crab at the rear end and a fixed block at the end of the jib. The trussed beams were placed at a distance apart of 8ft. 4in. centres, but this crane was made with such an overhang that its weight and that of the load it was lifting should be distributed over not less than two trussed beams. The crane ran on a wooden track in the centre of the platform. As soon as a trussed beam was fixed in position the space between it and the one behind was covered with 3in. planks all cut to dead lengths; the crane and track were then advanced and another trussed beam put in position and covered over as before. Three trussed beams were fixed on each girder; consequently when the platform was completed from end to end it was composed of about thirty trussed beams 8ft. 4in. centres carrying a platform or deck 3in. thick. By this method two roof girders and two crane girders, and two trussed beams and the platform were fixed in a working day.

In order to facilitate the making of the platform, two 20in. gauge railways were laid, one on each side of the centre crane. On these were carried all the planks and other material required. The roof principals were lifted on to the platform by the steam derrick

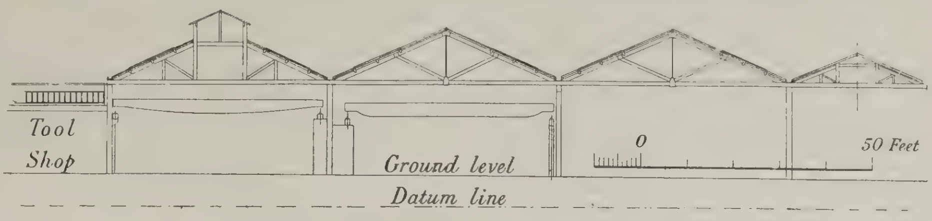


FIG. 1.

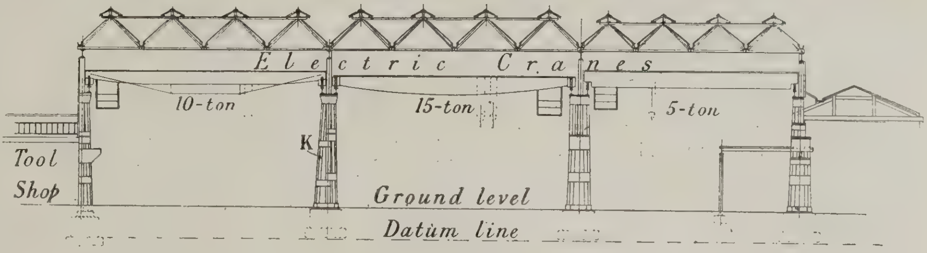


FIG. 2.

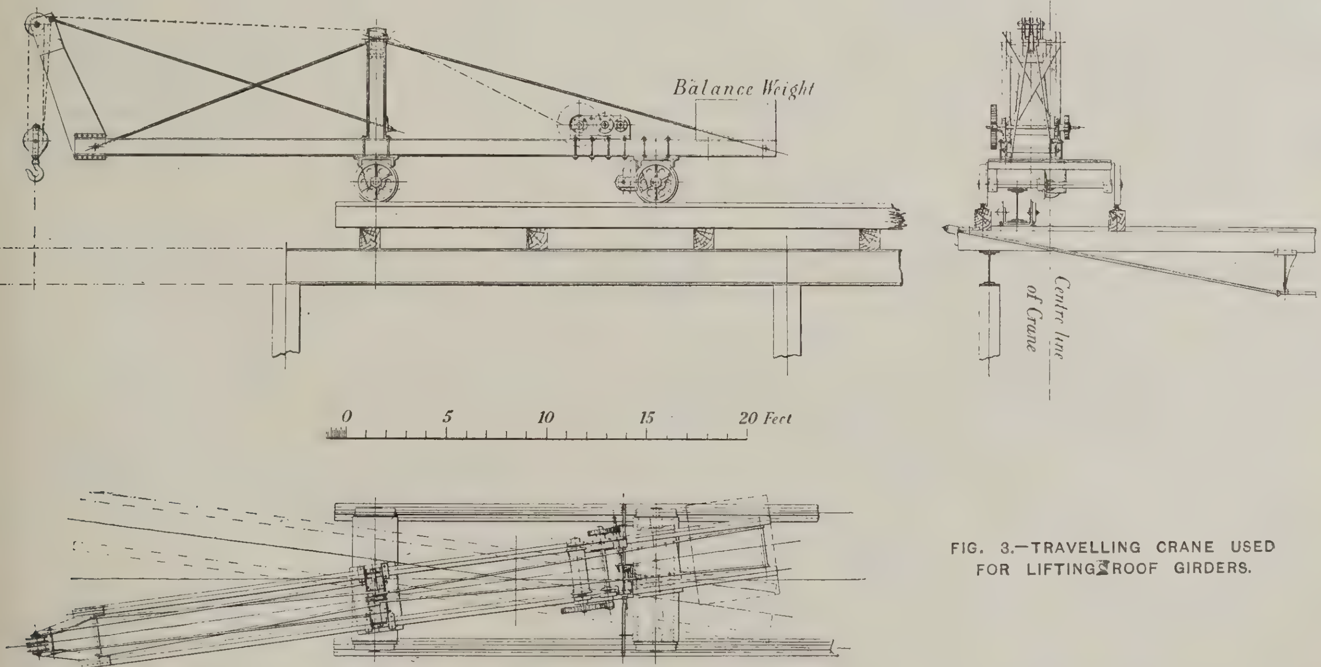


FIG. 3.—TRAVELLING CRANE USED FOR LIFTING ROOF GIRDERS.

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[*] A paper read before the Leeds meeting of the Institution of Mechanical Engineers.

in two halves, each half being put on a trolley on the 20in. gauge railway and conveyed to the far end where the parts were riveted together. When the platform was completed the wooden crane was taken away and the crane used for lifting the girders was brought into the centre of the platform and employed for lifting the roof principals and putting them in their proper positions. This crane was also used for lifting out the trussed beams as the work proceeded. The roof principals are placed at a distance of 12ft. 6in. apart; consequently either one or two trussed beams had to be removed before each pair of principals could be fixed.

The whole of the platform and all the principals for the roof of the opposite bay were fixed in three weeks, ordinary working time. As the principals of the new roof were erected, the planks that had formed the platform on the top of the trussed beams were used for making a scaffold or platform inside each of the four divisions of each roof. On this platform was then deposited, as required, all the glass, slates and timber necessary for the new roof. The glazing, timbering and slating were done with great rapidity, and by this means the whole of the last roof was glazed and slated in a fortnight.

The stanchions for this second bay of the boiler shop had to be erected between the existing longitudinal girders of the travelling crane and the wall of the shop, so as not to interfere with the old travelling crane. It became necessary, therefore, to make these stanchions in such a way that the back leg K (Fig. 2) could be fixed after the old roof and wall were taken down. Details of the roofs are given below. They are of the ridge and valley type, each roof divided into four ridges. They are glazed on each side with Heywood's patent glazing, with a slate ridge and ventilation for the whole length of each ridge. This type of roof is well adapted for shops where only top light can be obtained.

No accident occurred during the whole time the work was being carried out, and the shops went on without the slightest interruption.

# Enquiries Answered.

*The services of a large staff of experts are at the disposal of readers who require information on architectural, constructional or legal matters. Questions should in all cases be addressed to the Editor. The querist's name and address must always be given, not necessarily for publication.*

### Building Construction Diagrams.

STOKE-ON-TRENT.—G. B. writes: "Are large diagrams illustrating building construction used in any technical school?"

We do not know of any.

### R.I.B.A. Testimonies of Study.

PERTH.—A. S. R. writes: "Would the measured drawing of the old choir stalls in Dunblane Cathedral, published in THE BUILDERS' JOURNAL for January 14th last, be accepted as testimony of study No. 5 for the R.I.B.A. intermediate examination, or must both sheets be examples of stonework?"

The drawing would be quite suitable.

### Architects as Valuers.

HARPENDEN.—A. H. S. writes: "In the course of professional work an architect frequently makes valuations for the settlement of accounts, &c., and he therefore proposes to take out an appraiser's licence. (1) Which is the best book on the duties and liabilities of valuers? (2) Does the appraiser's licence cover house-agency work, or is a separate licence necessary?"

(1) "Hints to Young Valuers," by Anthony Richard Cragg, F.G.S., and J. R. V. Marchant, M.A., barrister, published by the "Land Agents' Record," 12 and 14, King Street, Westminster, S.W. (2) Yes; no other licence is necessary.

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WINCHESTER.—B. writes: (1) "Where can particulars be obtained of the examinations for the R.I.B.A. and the Surveyors' Institution? (2) Is it necessary to obtain a licence to practice as a house and estate agent?"

(1) Apply to the secretary of the Royal Institute of British Architects at No. 9, Conduit Street, W., and the secretary, Surveyors' Institution, Great George Street, S.W. (2) No; but it is necessary to have an appraiser's licence (cost £2) to make valuations.

### Sterilizing Room in Hospital.

LONDON, N.—S. T. writes: "What is a sterilizing room in connection with a hospital operating theatre, and what apparatus is required for it?"

We assume that your question has reference to the article on the new Belgrave Hospital for Children recently published in our columns. The sterilizing room is used to sterilize the instruments after an operation, thus killing all germs. The apparatus consists simply of a pair of steam chambers, heated by gas or electricity, on a marble slab.

### Quantity Surveying.

QUANTITY writes: "What is the name of the college where the students in quantity surveying are supplied with lithographed class notes?"

PERPLEXED writes: "Where can a complete set of the working-out of quantities, with the necessary tracings, &c., be obtained?"

Mr. W. T. W. Castell, of 31, Great St. Helen's, E.C., gives instruction by correspondence, and has, I believe, a set of drawings and notes which I think would meet your wishes. W. E. D.

### Architect's Commission on School Desks.

LEEDS.—CLIENT writes: "An architect acts as an agent to a school authority in ordering desks of a stock size from a furnishing company. Is he entitled as architect to charge a 5 per cent. commission on the cost of such desks? Again, if slight alterations to the desks are made by the company under the order of the architect, would he then be entitled to the 5 per cent. commission?"

The answer to this question should be supplied by the conditions governing the employment of the architect by the school authority, but in the absence of any specific agreement the architect would probably be quite in order in claiming a commission for his services as agent, especially so if he stands

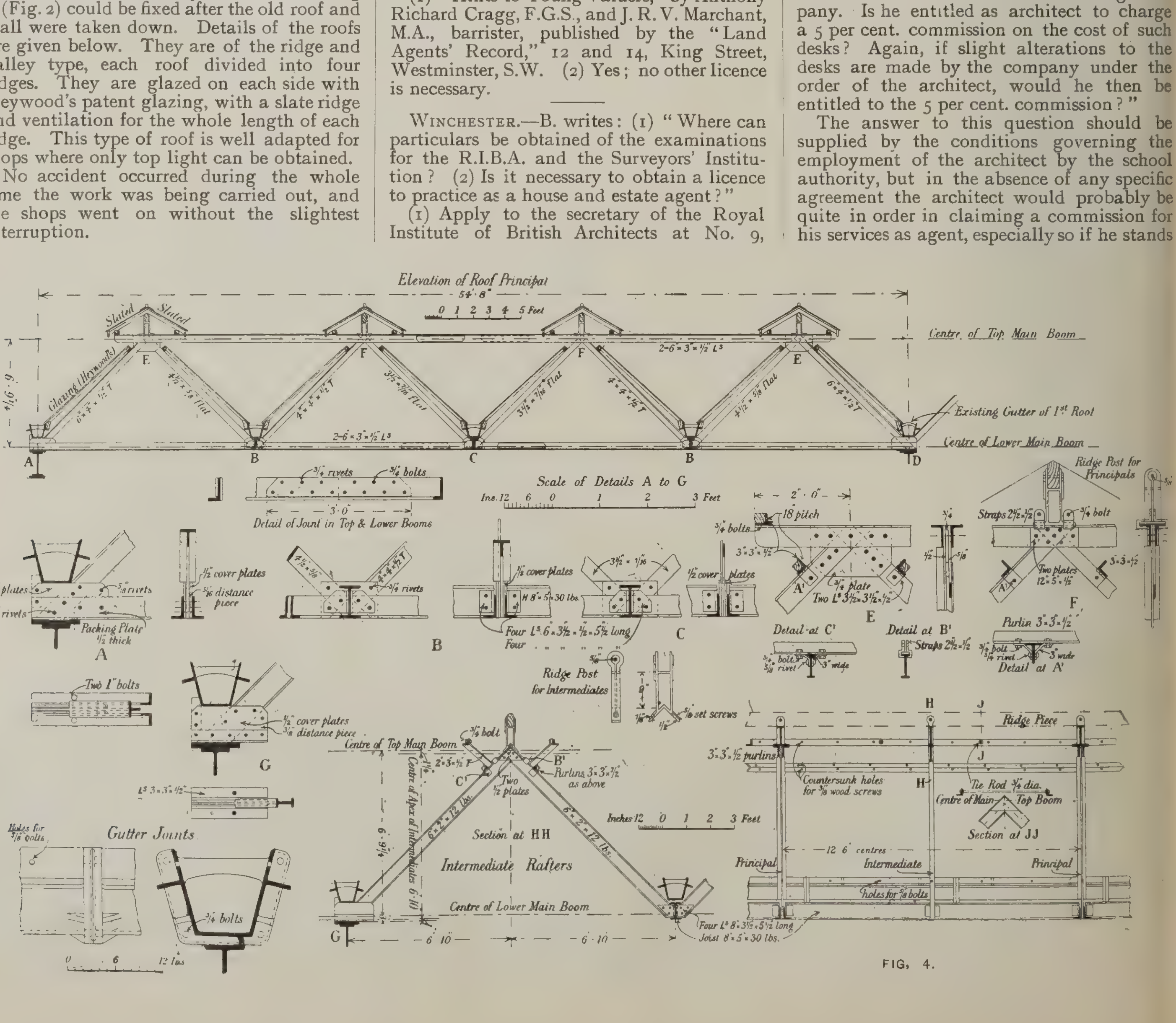


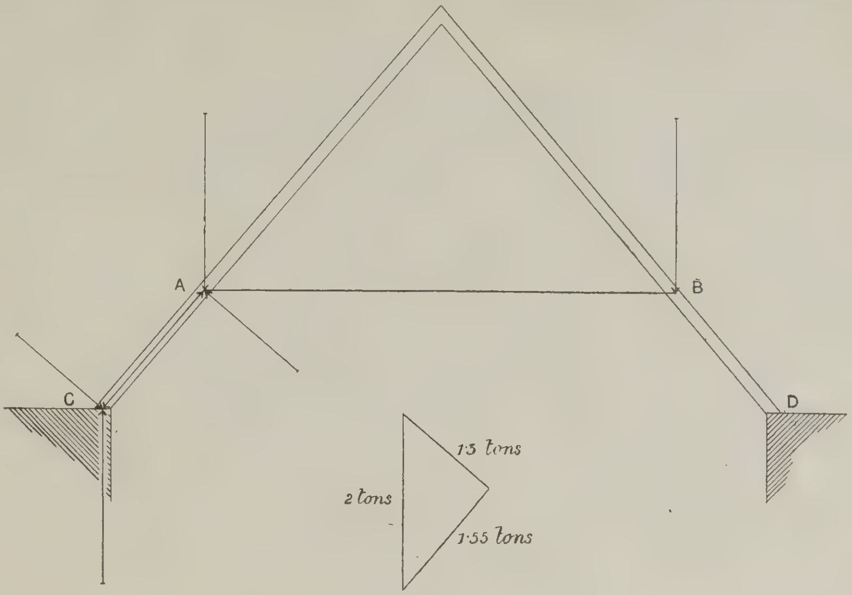
FIG. 4.

in the position of an expert in such matters. It is by no means unusual for an expert when planning an installation of machinery to be paid a commission upon the total cost, and there is no reason why the same conditions should not apply to an installation of school desks. If any charge is made it should be upon total cost, including alterations. H. E.

### Gables out of Plumb.

CAMBRIDGE.—M. A. and T. write: "The building shown on the accompanying plan (not reproduced) has been erected about seven months. Two months ago we noted that the large dormer gables in the main hall were not perpendicular. We have noted since that the 'list' does not grow any worse, though the timber roof has sagged very slightly (owing, we think, to natural shrinkage of the wood principals); but two of the Bath stone corbels have fractured. (1) Do you think the roof framed as shown could 'spread' appreciably with abutments 1ft. $10\frac{1}{2}$in. thick at principals; or (2) is it more probable the brickwork itself has not been built perfectly upright? (3) Is it necessary to take down the gables, or should they be strutted up from outside? (4) Is there any danger from a list of $4\frac{1}{2}$in. in nearly 50ft. of height?"

These trusses should have been designed on the assumption that the walls have no abutment value. In the case of a continuous roof, the roof itself has very considerable value as two beams inclined to one another and meeting at the ridge at what may be called the compression edges; and this accounts for many roofs which are not scientifically designed showing no early signs of weakness: but in this case the dormer gables, by breaking the continuity of the slanted girders, do away with the usual fortuitous strength of the sheeting or battens. Consider the diagram here reproduced. I take the weight on the principal above the tie at, roughly, 4 tons (I go into no niceties of wind-pressure). The stilt from the tie downwards is maintained in equilibrium by two couples which, if we suppose it jointed at A and that the wall at C affords no lateral support, will have the forces as shown. It will be seen that a couple equal and opposite to that of which the forces are 1·3 tons—that is, a bending moment of about 9·1 ton feet—is resisted by the cross-section of the rafter at the tie (considered as a beam), and this cross-section is much weakened by the hole for the tie. The way in which the spandrel between the hammer-beam and the rafter and wall-post is filled in appears to afford some tensional strength, but the construction altogether indicates that this part is designed to take a thrust. The sagging of the roof is due to the principal rafters having bent at A, owing to the bending moment at that point, and not to any shrinkage of the timbers. (1) Yes, I should have expected the spreading described. (2) The brickwork was built upright. (3) It may be necessary to take down the gables, but the strengthening which can be immediately done—and which should not be delayed—is to support the roof on sufficient struts from the floor (the floor should be strengthened if necessary); the curved filling below the hammer-beams should be taken off and sufficient ties should be put in between the hammer-beams and the principal rafters, so that there will not be a cross breaking stress on the rafter at A. Assume no horizontal resistance value in the walls. It might be possible to lift the roof to its original position with jacks and bring back the dormers to plumb. When the principals are properly braced they may be again filled to their present form. (4) I should be surprised to find that the list is evenly distributed over the 50ft. of height: I should expect the floors to have some tying value. It should be seen that the existing roof ties are sufficiently strong. No time should be lost in attending to this work; it is probably owing to the unintentional tying value of the spandrels that the whole thing has not collapsed already. The roof being temporarily supported from the floor and strengthened, the walls may come back of themselves—assisted by ties and screws: the roofs may then be again made to rest on the walls, and all made secure. P.



GABLES OUT OF PLUMB.

### American Houses.

HULL.—H. J. P. writes: "Which American journal publishes the best illustrations of domestic and other buildings?"

We have many times given particulars of the architectural and building journals published in the United States; see p. 33 of our issue for August 28th, 1901. The "American Architect" (211, Tremont Street, Boston, Mass; 8 dols. a year, post free, to this country) publishes a number of plates every week, some of them excellent and others inferior. The "Architectural Review," "Architecture" and "Brickbuilder" are all well produced, and contain many reproductions of domestic buildings. Particulars of them are given in the issue stated.

### Broken Contracts.

CUMBERLAND writes: "I have carried out the mason and brick work of a building, and in sending in my tender undertook to do it for a given sum and according to plans and specifications. Soon after commencing, the house was made larger, for which I gave an additional tender. I never signed plans, specification, conditions or agreement. I never had a copy of specification, and could only see it by calling at the architect's office. (1) Is there a binding contract? (2) Can I charge time and material for what has been done? (3) If so, can I charge for my own time?"

A verbal agreement is as binding as one that is written, signed and stamped, but it may be more difficult to enforce the former than the latter in a court of law, for the reason that the terms of the verbal agreement may be open to dispute. It would seem as if you have tendered too low and bitten your fingers; so that you now want to cry off the engagement. Probably you cannot, for your written tender will remain as proof of the agreement; and unless you can show some better argument for going or attempting to go behind your word, you are advised to adopt the honourable course and pocket your loss. It was a foolish proceeding to tender for work without having seen the specification, but that fact seems to afford no reasonable excuse for breaking the contract. Replying specifically to the questions, the answers will be: (1) Yes. (2) No. (3) Yes, if you worked as a journeyman; otherwise, No. H. E.

MERE.—J. H. writes: "A short time ago you replied to a query of mine concerning a plan, specification and stamped agreement. The same persons have now given the work to a relative without saying a word to me, though my scaffold poles have been around the job for more than six months. What do you advise me to do?"

We advise you to immediately engage a solicitor to proceed on your behalf for the value of the work done and loss of profit entailed by the breaking of the contract.

### Size of Rainwater Drain.

BRENTWOOD.—Kro writes: "Is there any rule by which one can determine the size of a rainwater drain from a long range of roofs? Does the size of drain depend on the number of down-pipes?"

The size of the drain should certainly depend upon the amount of water to be carried away. No rule can be given for determining the size of drain according to the number of rainwater pipes, for the size of down-pipes may vary and their number does not indicate the area of the surface from which they have to remove the water. The drains should be designed to conveniently remove the whole of the water during heavy storms. Provision should be made for removing ·75 in depth of water per hour on any impervious surface, such as a roof or paved yard, ·4 from gravelled surfaces, and ·1 from grass land. You will find all information as to sizes of drains, falls, laying, &c., in "Specification No. 6," published at 6, Great New Street, E.C., price 5s. nett, or 5s. 9d. post free.

### Cracks in Brick Walls.

V. V. writes: "I have lately seen some brick walls which have developed cracks in various places. The mortar was made of cement and sand, and both were said to be of the best quality, the cement finely ground and well seasoned. I am told this is not an unusual occurrence, but find opinions vary considerably as to the cause. The strange feature is that the cracks do not commence until quite a month after the mortar has been used, and continue to develop for several months longer. This, too, I am told is usual. What is the cause?"

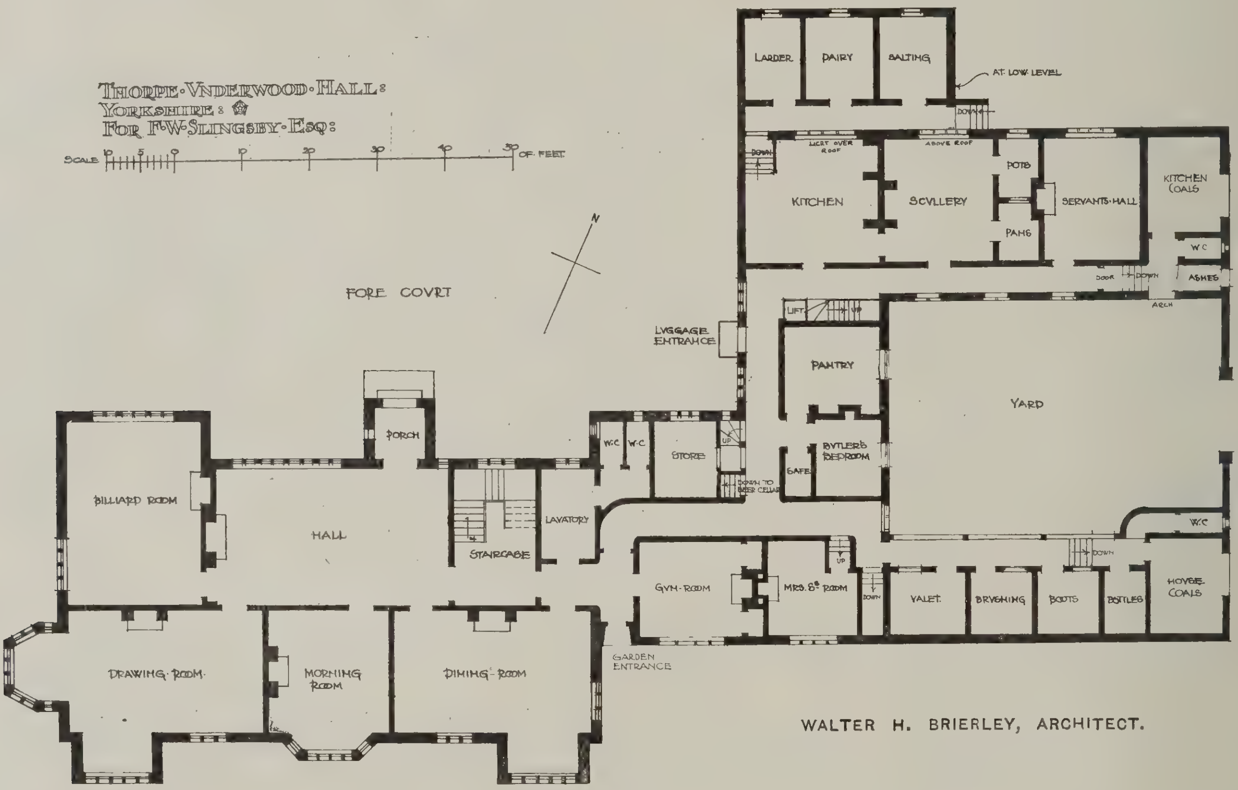
The foundations must be faulty, the soil being unequally weighted.

# Bricks and Mortar.

**Aphorism for the Week.**

*To become excellent in any pursuit two things are absolutely necessary. The first is, to deposit in the memory, as in a vast magazine, many useful objects; the other is, to examine what predisposition one has for fame.*—MILIZIA.

**Our Plates.** THE Writing School of Christ's Hospital was virtually founded by Lady Ramsey, wife of the Lord Mayor in 1577. Her will, dated January, 1596, left £20 per year to "maintain in the said hospital a writing school." Towards the end of the seventeenth century, the accommodation being inadequate, Alderman Sir John Moore offered to remedy the defect by building a school at his own cost. On February 20th, 1672, Wren, who was called in to design the building, "presented the draughts of the new intended writing schools," including the writing master's house, which is probably the present warden's house. Hawksmoor now seems to have taken the matter in hand and to have made the drawings and superintended the building operations, for which the Governors of the hospital gave him ten guineas as an expression of their thanks to him for his great care and service therein. The school was opened on April 11th, 1695, being built within three years. The niche was built into the centre window about fifteen years later, to contain a statue of the founder, Sir John Moore, carved by Grinling Gibbons, which was first placed within the school. The statue is now within the new school at Horsham.—Thorpe Underwood Hall, Yorkshire, is now nearing completion for Mr. F. W. Slingsby. It is situate about twelve miles from York, in a well-wooded park, and is surrounded by the old gardens of an eighteenth-century house which is to be pulled down. It is built of 2in. hand-made red bricks, with Hollington stone mullioned windows and dressings to front part of house, the plinth, string and dentilled cornice being of hand-moulded bricks, with simple oak frames to the windows of the servants' wing, which is to the north-east of the house. The roofs are covered with small thick grey slates. The woodwork, including the floor joists, roof timbers, &c., is nearly all of oak grown in the neighbourhood, and the principal rooms are to be panelled in oak. The panelling, doors, fireplaces and other objects of interest in the old house are to be reused in the new one. The architect is Mr. Walter H. Brierley, of York, and the builder Mr Anelay, of York and Doncaster. The drawing reproduced was exhibited at this year's Academy.



WALTER H. BRIERLEY, ARCHITECT.

**Irish Architects for Irish Buildings.** THE question recently asked by Mr. Mooney in the House of Commons as to the selection of an architect for the proposed new building at the Royal College of Science, Dublin, so far leaves the matter as it then stood, and no architect has as yet been appointed. The choice, it appears, will be made on the recommendation of the Irish Board of Works and the Agricultural Board, and the selection is a very important one from the Irish workman's point of view. Up to the present time it has been the practice to leave new public buildings in Ireland, or additions to existing ones, to Irish architects, and with the best results so far as local employment and effective design and structure are concerned. Why is it that there seems to be a hitch now?—asks Mr. William Doyle, alderman, of Dublin. "It can scarcely be want of talent, for there are plenty of Irishmen well able to hold their own with the best architects that can be procured in England or elsewhere; but it looks as if the whole thing were nothing more or less than a Treasury prejudice against Ireland. It is easy to imagine what would be thought in England if for a public building in London English architects were excluded and choice made from elsewhere. The Treasury would not care to play that game there, and there is no reason why it should be practised here. It is to be hoped that the Board of Works and Sir Horace Plunkett will speedily come to an understanding, and by making a joint recommendation to the Treasury do their part at least in preventing this important office from passing out of Ireland. Its importance may be gauged from the fact that in recent similar contracts, such as the Science and Art Museum, the Engineering College, the new addition to the National Gallery, &c., Irish workmanship and material were exclusively employed as far as possible, and the great bulk of the money retained in this country. Some of it went to the marble quarries of Kilkenny, Midleton, Connemara and Donegal; much of it remained in Dublin among workmen and tradesmen; and the buildings remain to-day a credit to architect, workmen and materials. I feel confident that when Sir Horace Plunkett's attention is drawn to this matter he will see the importance of having an Irish architect appointed, in the interest both of Irish workmen and infant Irish industries. The contract for the new building will be something like £150,000, and while this sum is a mere atom in the bulk of English trade, it is a very substantial item to Ireland. The labour bodies are very keenly interested in this matter, and it is to be hoped they will spare no effort to secure that the Irish architect gets the preference in his own land, all other things being equal. There is not much of a concession to expect even from the British Treasury, and it would, in my humble judgment, reflect very little credit on that body if an English architect were chosen, for, apart from the offence it would be to Irish feeling, it would undoubtedly lead to extra cost."

**Archaeological Discoveries near Odessa.** LAST June the commission of the Imperial Archæological Society of St. Petersburg commenced making excavations on a large scale at a place near the site of the ancient Greek town of Olivia, in the district of Odessa. Underneath one of the tumuli that was laid bare there an interesting ancient edifice of the Hellenic period was brought to light, which, like many other edifices in the neighbourhood, must have been pillaged about 50 B.C. There is reason to believe that all these buildings were destroyed by the Goths, who subsequently established a Gothic kingdom in the Crimea. Underneath the Hellenic remains traces of still more ancient buildings have been found; also a colossal marble block, with an inscription on the same, stating that the goddess Diana was worshipped in Olivia. The graves in the tumuli are also being excavated, and several remarkable finds have already been made by the head of the commission.

# Builders' Notes.

**For Tipping Building Rubbish into the Mersey** a Stockport contractor was recently fined £5 and costs. It was estimated that 200 tons were so tipped.

**The Workhouse Infirmary, Blackburn,** has been supplied by Messrs. E. H. Shorland & Brother, of Manchester, with their patent Manchester stoves with descending smoke flues.

**Peterhead Master-Builders' Association.**—Elections for the forthcoming year:—President, Mr. William Hadden; vice-president, Mr. John Davidson; secretary and treasurer, Mr. A. Clark-Martin.

**At the Royal Naval College, Osborne,** the hot water for baths, lavatories and sinks, and for heating towel-rails and linen-rooms, is supplied by patent "Duplex" boilers which consume their own smoke and prevent incrustation arising from chalky nature of water. These have been installed by Mr. Edward P. Milne, of 15, Craven Street, W.C.

**Messrs. Doulton** have given notice to the sanitary potters at their Burslem Works to terminate their contracts, with a view to a reduction in the prices paid for certain articles. The operatives have given a counter-notice asking for an increase in the prices paid for some other articles. Messrs. Doulton offered to submit the whole matter to arbitration, but the operatives have passed a resolution not to submit to any reduction and not to accept arbitration.

**The Scottish Sanitary Congress**—Professor Glaister, chair of forensic medicine in Glasgow University, delivered his presidential address to the Scottish Sanitary Congress opened at Stranraer last week. Speaking of the massing of the people in large centres, he emphasized the necessity for enumeration at shorter intervals. Scientists and local authorities, he advocated, should realize the detrimental effect of atmospheric pollution and should tackle the subject together. A number of papers dealing with sanitary matters were afterwards read and discussed.

**London Bridge Widening.**—The work of widening London Bridge is being pushed forward rapidly, and it is hoped that all will be completed by March next. As a sign of progress, it is interesting to note that Pethick Brothers are asking for tenders for the purchase of the temporary bridges. These footbridges (which are 1,000ft. long) were included in the original contract. The "lot" consists of 800 tons of steel girders and other material, 30,000ft. super. of galvanized corrugated iron from the roofs and sides, 30,000 cub. ft. of timber, 225 sqs. of 3in. flooring, 4,000ft. of gutter piping, 4,000ft. of steel rails, steel palisading, and all the electric-light fittings, there being five lamps on each bridge and a navigation light in the centre of each span (five in all), and one on the timber construction round each pier.

**Master House Painters and Decorators.**—Councillor James Higson, J.P., of Salford, has been nominated by the Council of the National Association of Master House Painters and Decorators of England and Wales (Incorporated) for the position of president for 1903-4, and it is probable that the convention next year will be held at Manchester. It will be then exactly ten years since the Association visited the city, the last occasion being at the time of its inauguration in 1894. The Association will go to Manchester next year, a representative body, as its constituents cover the whole of England and Wales. Amongst its five life members are Mr. Walter Crane and Mr. George C. Haité; two are American citizens, and one an eminent Scotch decorator. The tenth annual convention meets at Nottingham on the 21st instant, and Lord Henry Bentinck, M.P., is to open the proceedings.

# Electrical Notes.

**Electric Machinery** offers a promising field in Russia. The British Consul at St. Petersburg states that the large German and Austro-Hungarian electrical firms have established branches in the country, while the names of British makers remain almost unknown to Russian purchasers.

**Birmingham's Electric Trams.**—There are indications that now the Birmingham Tramways Committee have a free hand and are independent of the operations of the Electric Traction Co., gratifying progress is likely to be made with the great work of improving the trams, which, as they exist at present, are a disgrace to what has always ranked as a progressive city. The committee have accepted a tender for the construction of new tram sheds in Elkington Street, and have decided on the type of car to be used on the Aston line—which is to be similar to that now in use on the Bristol Road route, with the exception that it is built on bogey trucks instead of on the four-wheel principle.

**Electrification of the District Railway.**—Although it has been publicly stated that the electric trains cannot be running for public traffic on the District Railway until the end of 1904 there is every probability, says a correspondent, that a partly electric service will be put in operation on the Inner Circle in about seven months' time. The contract for the entire electric control equipment has been let to the British Thomson Houston Co. and a clause in the agreement calls for the complete equipment of forty trains within seven months. As soon as these are delivered they will be placed in service. The present steam trains will be removed from the lines as they can be replaced by the electric trains, so that there will be no interruption of the regular traffic. The experiments on the electrically-equipped line at South Harrow are still going on with a view to deciding on the type of motor to be adopted. The contract for the motor equipment has yet to be placed.

**Power Production from Refuse Destructors.**—In a leading article in its current issue the "Electrical Review" observes that steam raising from the burning of refuse is only profitable when the total costs of destruction are less than the cost of coal and coal firing. Thus, granting that in some localities the calorific value of the refuse is one-fifth that of coal, it means that instead of firing 1 ton of coal 5 tons of refuse must be fired. And more than this, for every 5 tons of refuse fired, from 1½ to 2 tons must be handled in the form of clinker. The labour item must, therefore, be six or seven times as much as for coal. But in a small electric-light station firing only about 1 ton of coal a day the cost per ton is high, and the cost of 1 ton of coal plus firemen's wages would probably amount to more than the total cost of dealing with 5 or 6 tons of refuse. The cost of destroying a ton of refuse may be reckoned at 2s., that is 9d. per ton for firing and 1s. 3d. for standing charges. But in such a station as we are assuming the load occurs during only a small portion of the day, whereas the refuse would need to be burned during eight to ten hours. This necessitates storage, and probably a part of the storage charges would have to be debited to the destructor. . . . It is clear, therefore, that in large supply stations the financial value of refuse as a steam raiser is, at the best, inconsiderable, although in the early stages of a small station it may be sufficient to supply the whole of the steam required, and thus help to pay part of the costs of destruction. The point we again wish to impress is that refuse destruction is, primarily, a sanitary question, power production being necessarily a secondary consideration.

# Current Market Prices

## FORAGE.

| | | £ | s. | d. | £ | s. | d. |
|---|---|---|---|---|---|---|---|
| Beans .. .. .. | per qr | 1 | 14 | 0 | 2 | 0 | 0 |
| Clover, best .. .. | per load | 4 | 7 | 6 | 4 | 15 | 0 |
| Hay, best .. .. .. | do. | 3 | 15 | 0 | 4 | 10 | 0 |
| Sainfoin mixture .. | do | 3 | 15 | 0 | 4 | 5 | 0 |
| Straw .. .. .. | do. | 1 | 10 | 0 | 2 | 2 | 0 |

## OILS AND PAINTS.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Castor Oil, French .. | pet cwt. | 1 | 0 | 5 | | — | |
| Colza Oil, English .. | do. | 1 | 4 | 0 | | — | |
| Copperas .. .. | per ton | 2 | 2 | 6 | | — | |
| Lard Oil .. .. .. | per cwt. | 2 | 15 | 0 | 2 | 17 | 0 |
| Lead white, ground, carbonate .. .. | do. | 1 | 4 | 10 | | — | |
| Do red .. .. .. | do | 1 | 0 | 4½ | | | |
| Linseed Oil, barrels .. | do. | 0 | 19 | 4½ | | — | |
| Petroleum. American .. | per gal. | 0 | 0 | 6 | 0 | 0 | 6⅛ |
| Do Russian .. | do. | 0 | 0 | 4¾ | 0 | 0 | 4⅞ |
| Pitch .. .. .. | per barrel | 0 | 8 | 0 | | — | |
| Shellac. orange .. .. | per cwt. | 7 | 18 | 0 | | — | |
| Soda, crystals .. .. | per ton | 3 | 2 | 6 | 3 | 5 | 0 |
| Tallow Town .. .. | per cwt. | 1 | 6 | 3 | 1 | 6 | 6 |
| Tar, Stockholm .. .. | per barrel | 1 | 0 | 6 | | — | |
| Turpentine .. .. | per cwt. | 2 | 4 | 0 | | — | |

## METALS.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Copper, sheet, strong .. | per ton | 75 | 0 | 0 | | — | |
| Iron Staffs bar.. .. | do. | 6 | 5 | 0 | 8 | 10 | 0 |
| Do Galvanised Corrugated sheet .. | do. | 11 | 0 | 0 | 11 | 5 | 0 |
| Lead, pig, Soft Foreign.. | do. | 11 | 3 | 9 | 11 | 5 | 0 |
| Do. do. English common brands .. | do. | 11 | 8 | 9 | 11 | 10 | 0 |
| Do. sheet English 3lb. per sq. ft and upwards .. | do. | 14 | 0 | 0 | | — | |
| Do. pipe .. . | do. | 15 | 0 | 0 | | — | |
| Nails, cut clasp, 3in to 6in. | do. | 9 | 5 | 0 | | — | |
| Do. floor brads .. | do. | 9 | 0 | 0 | | — | |
| Steel, Staffs., Girders and Angles . .. | do. | 5 | 15 | 0 | 6 | 7 | 6 |
| Do do. Mild bars .. | do. | 6 | 7 | 6 | 7 | 2 | 6 |
| Tin, Foreign .. .. | do. | 123 | 10 | 0 | 124 | 0 | 0 |
| Do. English ingots .. | do. | 125 | 10 | 0 | | — | |
| Zinc, sheets, Selesian .. | do. | 23 | 10 | 0 | | – | |
| Do. do. Vielle Montaigne | do. | 24 | 10 | 0 | | — | |
| Do Spelter .. .. | do. | 20 | 15 | 0 | 21 | 2 | 6 |

## TIMBER.

### Soft Woods.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Fir, Dantzic and Memel | per load | 1 | 13 | 0 | 3 | 0 | 0 |
| Pine, Quebec, Yellow .. | do. | 5 | 5 | 0 | 6 | 5 | 0 |
| Do. Pitch .. .. | do. | 2 | 12 | 0 | 3 | 3 | 0 |
| Laths log, Dantzic .. | per fath. | 4 | 10 | 0 | 5 | 10 | 0 |
| Do. Petersburg .. | do. | 7 | 5 | 0 | | — | |
| Deals, Miramichi White Spruce 1st, 2½×7 | do. | 8 | 10 | 0 | | — | |
| Do. do. do. 2nd, 2½×7 | do. | 8 | 10 | 0 | | — | |
| Do. do. do. 3rd 2½×7 | do. | 8 | 10 | 0 | | — | |
| Do. Blankaholm, Yellow, 2nd, 4×9 | do. | 10 | 15 | 0 | | — | |
| Do. Pernoviken, Yellow, 1st, 2½×8 | do | 9 | 5 | 0 | | — | |
| Do. do. do. 2nd, 2½×8 | do. | 9 | 5 | 0 | | — | |
| Do. Keret, Yellow, 4th, 3×11 | do. | 9 | 0 | 0 | | — | |
| Do. Haparanda, Yellow, 1st, 2½×9 | do. | 11 | 15 | 0 | | — | |
| Do. do. do. do. 2½×8 | do. | 9 | 5 | 0 | | — | |
| Do. Nederkalix, Yellow, 2nd, 2½×7 | do. | 10 | 5 | 0 | | — | |
| Do. Rimouski, Unsorted Bright Spruce, 3×9×4 and 5ft. to 8ft. | do. | 9 | 0 | 0 | | — | |
| Do. Archangel, Yellow, 2nd, 3×7 | do. | 13 | 10 | 0 | | — | |
| Do. do. do. 3rd. 3×11 | do. | 12 | 15 | 0 | | — | |
| Do. do. do. 3rd, 3×9 | do. | 11 | 15 | 0 | | — | |
| Do. do. do. 3rd, 3×8 | do. | 9 | 15 | 0 | | — | |
| Do. do. do. 4th, 3×11 | do. | 8 | 10 | 0 | | — | |
| Do. do. do. 4th, 3×9 | do. | 10 | 0 | 0 | | — | |
| Do. Galatz, White, 1st, 3×11 | do. | 7 | 15 | 0 | | — | |
| Do. do. do. 2nd, 3×11 | do. | 6 | 15 | 0 | | — | |
| Do. do. do. do. 2½×11 | do. | 7 | 0 | 0 | | — | |
| Do. do. do. do. 2½×9 | do. | 7 | 5 | 0 | | — | |
| Do. Gulf Port, Sawn Pitch-Pine, 6×12 | do. | 12 | 5 | 0 | | — | |
| Do. Björneborg, White, 4th, 2½×7 | do. | 8 | 15 | 0 | | — | |
| Do. Mon, inferior Yellow, 5th, 3×9 | do. | 8 | 15 | 0 | | — | |
| Do. do. do. do. 3×8 | do. | 7 | 18 | 0 | | — | |
| Do. Montreal, White Spruce, 3rd, 3×9×13ft. | do. | 9 | 10 | 0 | | — | |
| Do. Quebec, Bright Spruce. 3rd, 3×9×13 | do. | 9 | 15 | 0 | | — | |
| Battens, all kinds .. | do. | 8 | 0 | 0 | 6 | 5 | 0 |
| Flooring Boards 1in. prepared, 1st .. .. | per square | 0 | 9 | 6 | 0 | 10 | 9 |
| Do. 2nd .. .. | do. | 0 | 9 | 0 | 0 | 11 | 0 |
| Do. 3rd &c. .. .. | do. | 0 | 8 | 0 | 0 | 10 | 6 |

### Hard Woods.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Ash, Quebec .. .. | per load | 3 | 12 | 6 | | -- | |
| Birch, Quebec .. .. | do. | 3 | 12 | 6 | 3 | 17 | 6 |
| ox, Turkey .. .. | per ton | 15 | 0 | 0 | 20 | 0 | 0 |
| Cedar, Cuba .. .. | per ft. sup. | 0 | 0 | 5¼ | | — | |
| Do. Honduras .. | do. | 0 | 0 | $5\frac{31}{32}$ | | — | |
| Do. Tobasco .. .. | do. | 0 | 0 | $4\frac{31}{32}$ | | | |
| Elm, Quebec .. .. | per load | 4 | 0 | 0 | | — | |
| Mahogany. Average Price for Cargo, Honduras .. | per ft. sup. | 0 | 0 | $6\frac{1}{32}$ | | — | |
| Do. African .. | do. | 0 | 0 | 4⅜ | | — | |
| Do. St. Domingo | do. | 0 | 0 | $3\frac{29}{32}$ | | — | |
| Do. Cuba .. | do. | 0 | 0 | 5[illegible] | 0 | 0 | |
| Do. Lagos .. | do. | 0 | 0 | 3[illegible] | | — | |
| Do. Benin .. | do. | 0 | 0 | $4\frac{11}{16}$ | 0 | 0 | $5\frac{21}{32}$ |
| Do. Tobasco .. | do. | 0 | 0 | $6\frac{1}{32}$ | 0 | 0 | 8¼ |
| Oak, Dantzic and Memel | per load | 3 | 5 | 0 | 3 | 15 | 0 |

*Address the M. J. and S. H. Adams' Firms as under:—*

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# Complete List of Contracts Open.

| DATE OF DELIVERY. | WORK TO BE EXECUTED. | FOR WHOM. | FROM WHOM FORMS OF TENDERS MAY BE OBTAINED. |
|---|---|---|---|
| | **BUILDING:** | | |
| Sept. 10 | Kendal—Stable, &c. | Trinity College, Cambridge | J. Banks, Land Agent, Kendal. |
| „ 10 | Pontmorlais, Merthyr, Wales—Shop and House | ——— | C. M. Davies, 112 High Street, Merthyr Tydfil. |
| „ 10 | Frystone, near Castleford, Yorks—Fifty-two Houses and Shop | Wheldale Colliery Co., Ltd. | Garside & Pennington, Architects, Pontefract. |
| „ 10 | London, N.W.—Four Bedrooms at Infirmary | St. Pancras Guardians | A. A. Millward, Clerk, Town Hall, Pancras Road, N.W. |
| „ 10 | Kingswood, near Bristol—School | Gloucestershire Educ. Committee | J Mackay, Architect, Richmond Place Kingswood. |
| „ 10 | Bordesley and Olton—Wall, &c. | Great Western Railway Co. | Company's Engineer. Wolverhampton Station. |
| „ 10 | Manorhamilton. Ireland—Cottages | Rural District Council | P. Keany, Clerk, Workhouse, Manorhamilton. |
| „ 10 | Workington—Shop and Hall | Beehive Co-op. Society, Ltd. | W. G. Scott & Co., Architects, Victoria Buildings, Workington. |
| „ 10 | Wrexham—Bridge, &c. | Rural District Council | T. R. Evans, Highway Surveyor, Johnstown, Ruabon. |
| „ 11 | London, E.—Bandstand, &c. | London County Council | Architect's Dept., General Constrn. Sec., 15 Pall Mall East, S.W. |
| „ 11 | Hastings—Lodge | Corporation | P. H. Palmer, Borough Engineer, Town Hall, Hastings. |
| „ 11 | Ogmore Vale, Wales—Alterations to Premises | Nantymoel Industrial Co-op. Soc. | J. Morgan, Secretary, Nantymoel. |
| „ 12 | Berwick-upon-Tweed—Joiners' Work | ——— | J. M. Edney & Co., Sandgate. |
| „ 12 | Hartwell, near Aylesbury—Pair of Houses | ——— | F. Taylor, 26 Temple Street, Aylesbury. |
| „ 12 | Wakefield—Repairs, &c., to Stone Spire | ——— | City Surveyor, Town Hall, Wakefield. |
| „ 14 | Croydon—Extension of Electricity Works | Corporation | Deputy Borough Engineer, Town Hall, Croydon. |
| „ 14 | Cwmfelinfach, near Ynysddu, Wales—Twenty Houses | Cwmfelin Building Club | J. Boothman, School House, Ynysddu. |
| „ 14 | Limavady, Ireland—Cottages | Rural District Council | W. Crawford, Clerk, Council Offices, Limavady. |
| „ 14 | Armagh—Four Cottages, &c. | Lunatic Asylum Committee | R. H. Dorman. Court House, Armagh. |
| „ 14 | Penygraig, Wales—Departments for Boys and Girls | Ystradyfodwg School Board | J. Rees, Hillside Cottage, Pentre. |
| „ 14 | Pontypridd—Public Offices | Urban District Council | H. T. Hare, 13 Hart Street, London, W.C. |
| „ 14 | Hemsworth—Fifteen Houses | ——— | J. Simmons, Hague Lane, Hemsworth. |
| „ 14 | Westgate—Rebuilding Hotel | ——— | J. Jackson, Architect, Barry Street, Bradford. |
| „ 14 | Leeds—Five Houses, &c. | F. Terry | W. M. Coggill, Architect, Stourton, Hunslet. |
| „ 14 | Nottingham—School | School Board | F. B. Lewis, Architect, Barry Street, Bradford. |
| „ 14 | Bramhope—House | ——— | Child & Co., 149 Park Lane, Leeds. |
| „ 14 | Woodhouse—Club Premises | North-West Ward, Liberal Asso. | T. A. Buttery and S. B. Birds, 1 Basinghall Square, Leeds. |
| „ 14 | Whitby—Additions to Brewery | R. D. Spaven & Co. | H. G. Walker, Architect, Skinner Street, Whitby. |
| „ 14 | Thurles—Residence | ——— | W. Maher, Main Street, Thurles. |
| „ 14 | Glyncorrwg—Four Houses | ——— | D. Lewis, Glyncorrwg. |
| „ 14 | Winfrith—Alterations to House | E. Hughes | F. R. Bates, Architect, Newport, Mon. |
| „ 14 | Bishop Auckland—Minister's House | ——— | T. E. Davidson, Architect, Newcastle-on-Tyne. |
| „ 14 | Hereford—Repository | Greenland's, Ltd. | W. W. Robinson, Architect, King Street, Hereford. |
| „ 14 | Brampton—Residence | ——— | Rev. T. W. Willis, Lanercost Vicarage, Brampton. |
| „ 14 | Salford—School | ——— | L. C. Evans, Town Clerk, Town Hall, Salford. |
| „ 14 | Wimbledon—Two Blocks of Flats | Soldiers' and Sailors' Fam. Assoc. | C. E. L. Parkinson, 44 Bedford Row, W.C. |
| „ 14 | Colchester—Wesleyan Church and School | ——— | Coodey & Cressall, Architects, Victoria Chamber, Colchester. |
| „ 14 | Macclesfield—Shop | Equitable Provident Society | J. Wright, Architect, Macclesfield. |
| „ 14 | Bingley—Detached Residence | ——— | E. H. Parkinson, Architect, Old Branch Chambers, Bradford. |
| „ 14 | Longfleet—Infirmary Buildings at Workhouse | ——— | H. F. J. Barnes, Architect, Poole. |
| „ 14 | Leeds—Additions to Council School | Education Committee | W. S. Braithwaite, Architect, Calverley Street, Leeds. |
| „ 14 | Keswick—Reslating Inn and Cottage | ——— | Jennings Brothers, Ltd., Castle Brewery, Cockermouth. |
| „ 14 | Hull—Villa | ——— | J. M. Dossor, 2 Manor Street, Hull. |
| „ 14 | Dundalk—Extension of Shops | Gt. Northern Rly. Co. (Ireland) | Company's Engineer-in-Chief, Amiens St. Terminus, Dublin. |
| „ 14 | Edinburgh—Extension of Electric Power Station | Corporation | Clerk, Public Works Office, City Chambers, Edinburgh. |
| „ 14 | Wolston, near Coventry—Thirty-four Cottages | Blummel & Brothers | H. W. Chattaway, Architect, Trinity Churchyard, Coventry. |
| „ 14 | Finchley—Sixty Workmen's Dwellings | Urban District Council | E. H. Lister, Clerk, Finchley Hall, Church End, Finchley, N. |
| „ 14 | London, W.—Extension of Underground Convenience | St. Marylebone Borough Council | J. P. Waddington, Town Hall, Marylebone Lane, Oxford St., W. |
| „ 14 | Croydon—Extension of Electricity Works | Corporation | Deputy Borough Engineer, Town Hall, Croydon. |
| „ 15 | Leeds—Concrete Engine and Dynamo Foundations | Corporation | Milnes & France, 99 Swan Arcade, Bradford. |
| „ 15 | Manchester—Public Washhouse, &c. | Corporation | City Architect, Town Hall, Manchester. |
| „ 15 | Halifax—Shed | ——— | Jackson & Fox, 7 Rawson Street, Halifax. |
| „ 16 | Banbridge, Ireland—Enlarging, &c., School | Parish Church Vestry | W. W. Larmor, Engineer, Banbridge. |
| „ 16 | Hull and Selby—Station Buildings, &c. | North-Eastern Rly. Co. | W. Bell, Company's Architect, York. |
| „ 16 | Levenshulme—Library | Urban District Council | J. Jepson, Architect, Guardian Chambers, Tiviot Dale, Stockport. |
| „ 16 | Hay, Brecon—Isolation Hospital | Urban District Council | E. G. Davies, 7 Pridge Street, Hereford. |
| „ 16 | Birmingham—Boiler House, &c. | Corporation | Mansergh & Sons, 5 Victoria Street, Westminster, S.W. |
| „ 17 | Preston—Power Station, &c. | Corporation | W. H. Tittensor, 25 Burrow Road, Preston. |
| „ 17 | Wern, Salop—Market House and Assembly Hall | Urban District Council | J. Brown, 12 Castle Street, Shrewsbury. |
| „ 17 | London, S.E.—Repairs to Roofs, &c. | Southwark Union Guardians | A. J. Wade, 36 Fifth Avenue, Harrow Road, W. |
| „ 17 | Greenwich—Jobbing Works | Borough Council | Borough Engineer, Town Hall, Greenwich Road, S.E. |
| „ 17 | Bridlington—Greenhouse | Corporation | E. R. Matthews, Borough Surveyor, Town Hall, Bridlington. |
| „ 17 | Epsom—Destructor Buildings | Urban District Council | E. R. Capon, Surveyor, Council Offices, Bromley Hurst, Church Street, Epsom. |
| „ 17 | High Wycombe—Lodge | Rural District Council | B. L. Reynolds, 12 Easton Street, High Wycombe. |
| „ 17 | Nantyfyllon, Maesteg, Wales—Chapel | ——— | Rev. H. S. Thomas, Garnwern Terrace, Nantyfyllon. |
| „ 18 | Fairlight, near Hastings—Coastguard Station | Admiralty | Director of Works Dpt., Admiralty, 21 Northumberland Av., W.C. |
| „ 18 | Portsmouth—Manual Instruction Centres | Education Committee | A. H. Bone, Architect, Cambridge Junction, Portsmouth. |
| „ 19 | Lancaster—Produce Market | Properties Committee | J. C. Mount, Borough Surveyor, Town Hall, Lancaster. |
| „ 19 | Bridlington—Urinal | Corporation | E. R. Matthews, Borough Surveyor, Town Hall, Bridlington. |
| „ 19 | Bridlington—Lengthening Bridge, &c. | Corporation | E. R. Matthews, Borough Surveyor, Town Hall, Bridlington. |
| „ 21 | Knowle, Fareham—Engine House, &c. | Southampton County Council | W. J. Taylor, County Surveyor, The Castle, Winchester. |
| „ 22 | London, N.—Sorting Office | Commissioners of H.M. Works, &c | J. Wager, H.M. Office of Works, Storey's Gate, S.W. |
| „ 22 | Little Ilford—Materials and Labour at Cemetery | City of London Corporation | Engineer, Guildhall, E.C. |
| „ 22 | Wigan—Enlargement of Post Office | Commissioners of H.M. Works, &c. | Secretary, H.M. Office of Works, Storey's Gate, S.W. |
| „ 23 | Birmingham—School | Education Committee | A. Rowse, 3 Newhall Street, Birmingham. |
| „ 23 | Swindon, Wilts—Car Depot Stores, &c. | Corporation | Lacey & Sillar, 78 King Street, Manchester. |
| „ 24 | Woolwich—Public Baths | Borough Council | F. Sumner, Borough Engineer, Maxey Road, Plumstead. |
| „ 26 | Wigan—Cemetery Works | Burial Board | W. B. Johnson & Son 31 King Street, Wigan. |
| „ 26 | Steppingley, Beds—Isolation Hospital | Ampthill R.D.C. | F. T. Tanquery, Clerk, County Court Hall, Ampthill, Beds. |
| „ 30 | London, N.W.—Tenements, Stabling, &c. | Hampstead Borough Council | O. E. Winter, Borough Engineer, Town Hall, Hampstead. |
| Oct. 1 | Bradford—Office, Store, Shed, &c. | Corporation | J. Watson, Engineer, Town Hall, Bradford. |
| „ 6 | London, E.C.—Underground Convenience | Corporation | Engineer, Guildhall, E.C. |
| No date | Purfleet, Essex—Twenty-nine Workmen's Cottages | ——— | V. Millett, 72 Bishopsgate Street Within, E.C. |
| | **ENGINEERING:** | | |
| Sept. 10 | Longparish, Andover—Bridge | Rural District Council | J. Wormald, District Surveyor, The South Cottage Andover. |
| „ 11 | Cork—Water Tank and Roof | Corporation | H. A. Cutler, City Engineer, Municipal Buildings, Cork. |
| „ 11 | Stoke-on-Trent—Electrical Plant | Corporation | P. J. S. Tiddeman, Field Place, Stoke-on-Trent. |
| „ 11 | Palamos—Telephone System | ——— | Registry of Directorate of Posts and Telegraphs, 10 Calle de Carritas, Madrid. |
| „ 12 | Sydney—Electric Tramway Generating Set | Railway Commissioners | Agent-General for New South Wales, 9 Victoria Street, S.W. |
| „ 12 | London, E.—Electric Lighting | Whitechapel Union Guardians | F. J. Tootell, 74 Vallance Road, N.E. |
| „ 12 | Merthyr Tydfil, Wales—Electric Appliances | Hills Plymouth Co., Ltd. | Secretary, Company's Office, Merthyr Tydfil. |
| „ 14 | Kirkcaldy—Wiring, &c. | Corporation | Burgh Electrical Engineer, Kirkcaldy. |
| „ 14 | Southend-on-Sea—Electrical Plant | Corporation | W. E. J. Heenan, Borough Electrical Engineer, Southend-on-Sea. |
| „ 14 | Hastings—Stokehole, Heating Apparatus, &c. | Education Committee | C. A. Pigott, Architect, Saxon Chbrs., London Rd., St. Leonards. |
| „ 14 | London, S.W.—Pumping Plant | Fulham Borough Council | Superintendent and Engineer, Public Baths, Melmoth Place, Fulham, S.W. |
| „ 14 | Okehampton—Fire Escape | Town Council | F. J. Worden Borough Surveyor, Town Hall, Okehampton. |
| „ 14 | Westend, near Southampton—Filter Beds, &c. | South Stoneham Union Gdns. | W. F. Mitchell, Son & Gutteridge, 9 Portland St., Southampton. |
| „ 14 | Woodford, Essex—Fire Escapes | Urban District Council | W. Farrington, Surveyor, Council Offices, Woodford Green. |
| „ 14 | Portsmouth—Repairs to Pumps | Corporation | Borough Engineer, Town Hall, Portsmouth. |
| „ 14 | Aultbea, Scotland—Pier | ——— | Mr. Manners, 12 Lombard Street, Inverness. |
| „ 14 | Edinburgh—Smith & Ironfounder Work at Elec. Power Statn. | Corporation | R. Morham, City Architect, P.W. Office, City Chambers, Edinburgh. |
| „ 14 | Croydon—Smith and Ironfounder Work at Electricity Works | Corporation | Deputy Borough Engineer, Town Hall, Croydon. |
| „ 15 | Havre, France—Tidal Quay | ——— | M. Renard, Inginieur des Pontset Chausées, Havre. |
| „ 15 | Pittenweem, Scotland—Quay, &c. | Town Council | D. & C. Stevenson, 84 George Street, Edinburgh. |
| „ 16 | Talgarth, Brecon—Waterworks | Hay Rural District Council | R. E. W. Berrington, Engineer, Bank Buildings, Wolverhampton. |
| „ 16 | Wimbledon—Heating Chamber and System | Education Committee | Thomson & Pomeroy, Architects, Hill Road, Wimbledon. |
| „ 17 | Devizes—Bacteria Beds, &c. | Urban District Council | Beesley, Son & Nichols, 11 Victoria Street, Westminster, S.W. |
| „ 17 | Lichfield—Sewerage Works | Rural District Council | W. E. Rogers, Engineer, Rugeley. |
| „ 18 | Rio de Janeiro—Rolling Stock | Brazilian Central Railway Co. | Commercial Intelligence Branch, Board of Trade, 50 Parliament Street, S.W. |
| „ 19 | Madrid—Telephone Apparatus | ——— | Direction General of Posts and Telegraphs, Madrid. |

# Complete List of Contracts Open —*continued.*

| DATE OF DELIVERY. | WORK TO BE EXECUTED. | FOR WHOM. | FROM WHOM FORMS OF TENDERS MAY BE OBTAINED. |
|---|---|---|---|
| | **ENGINEERING**—*continued.* | | |
| Sept 20 | London, W.—Sweeping Machine | Paddington Borough Council | E. B. B. Newton, Borough Surveyor, Town Hall, Paddington W |
| " 22 | Irthlingborough, Northants—Pipelaying, &c. | Urban District Council | J. Waugh, Engineer, Sunbridge Chambers, Bradford. |
| " 22 | Irthlingborough, Northants—Engines | Urban District Council | J. Waugh, Engineer, Sunbridge Chambers, Bradford. |
| " 22 | Irthlingborough, Northants—Pipes | Urban District Council | J Waugh, Engineer, Sunbridge Chambers, Bradford. |
| " 22 | Irthlingborough, Northants—Valves, &c. | Urban District Council | J. Waugh, Engineer, Sunbridge Chambers, Bradford. |
| " 22 | Jassy, Roumania—Waterworks | Corporation | Mayor, Jassy, Roumania |
| " 23 | Estremoz-Castello de Vide—Railway | Portugal State Railways | Sessions Hall, Council of Administration of State Rlys., Lisbon. |
| " 27 | Pozoblanco, Spain—Electric Lighting Town | — | Municipal Authorities, Pozoblanco. |
| " 28 | Launceston, Tasmania—Electric Meters | — | J. Terry & Co., 7 Great Winchester Street, E.C. |
| " 30 | Conway—Sewerage and Waterworks | Rural District Council | T. B. Farrington, Engineer, Trinity Square, Llandudno. |
| " 30 | Brisbane, Queensland—Postal and Telegraph Material | — | Department Stores, Navy Street, Brisbane. |
| | **FURNITURE:** | | |
| Sept. 23 | Worksop—Furniture, &c. | Isolation Hospital Committee | F. Hopkinson, 40 Bridge Street, Westminster, S.W. |
| | **IRON AND STEEL:** | | |
| Sept. 10 | Bradford—Stores | Gas Committee | Engineer, Mill Street Gasworks, Bradford. |
| " 11 | London, E.—Iron Railings | London County Council | Architect's Department, General Construction Section, 15 Pall Mall East, S W. |
| " 12 | Merthyr Tydfil—Iron, Castings, Bolts, &c. | Hills Plymouth Co., Ltd | Secretary, Company's Offices, Merthyr Tydfil. |
| " 12 | West Mersea, Sussex—Fencing | Lexden and Winstree R.D.C. | J. Ennals, Surveyor, Copford. |
| " 14 | Croydon—Smith and Ironfounders' Work | Corporation | Deputy Borough Engineer, Town Hall, Croydon. |
| " 14 | Copenhagen—Cast-iron Pipes | Lighting Department | Gas Works Engineer, 1 Lavendelstrade, Copenhagen. |
| " 15 | Llansamlet, Wales—Iron Gate, Railings, &c. | Parish Council | R. Llewelyn, Architect, Birchgrove House, Llansamlet. |
| " 15 | London, N.E.—Ten Wrought-Iron Sand Bins | Hackney Borough Council | N. Scorgie, Borough Engineer, Town Hall, Hackney, N.E. |
| " 16 | Huddersfield—Tramway Rails, &c. | Corporation | Borough Engineer, 1 Peel Street, Huddersfield. |
| " 22 | Amsterdam—Steel Rails, &c. | — | Engineer-in-Chief, Maatschappij tot Exploitatie van Staatsspoorwegen, Utrecht |
| | **PAINTING AND PLUMBING:** | | |
| Sept. 15 | Richmond, Dublin—Plumbing, &c. | Asylum Committee | W. H. Byrne, 20 Suffolk Street, Dublin. |
| | **ROADS AND CARTAGE:** | | |
| Sept. 10 | Crewe, Cheshire—Paving | Town Council | G. Eaton-Shore, Borough Surveyor, Crewe. |
| " 11 | Totnes, Devon—Road Works | Rural District Council | S. S. Rendle, Surveyor, Hillside, Marldon Road, Paignton. |
| " 11 | Preston, Lancs—Paving, &c. | Corporation | Borough Surveyor, Town Hall, Preston. |
| " 12 | London, N.—Wood Paving | Finchley U.D C. | C. J. Jenkin, Council's Engineer, Church End, Finchley. |
| " 12 | Rugby—Road and Park Works | Urban District Council | D. G. Macdonald, Surveyor, Rugby. |
| " 12 | Selby, Yorks—Whinstone Sett Paving | Urban District Council | B. Mc G. Gray, Town Surveyor, Town Hall, Selby. |
| " 12 | Winchester—Flints | — | W. J. Taylor, County Surveyor, The Castle, Winchester. |
| " 14 | Willesborough, Kent—Steam Rolling | East Ashford R.D.C. | W. J. Potter, Surveyor, Mersham. |
| " 14 | Sheerness—Materials | Urban District Council | T. F. Berry, Surveyor, Council Offices, Trinity Road, Sheerness. |
| " 14 | Stockton-on-Tees—Improvement Works | Corporation | M. H. Sykes, Borough Engineer, Town Hall, Stockton-on-Tees. |
| " 14 | Woodford, Essex—Sewering, Kerbing, &c. | Urban District Council | W. Farrington, Surveyor, Council Offices, Woodford Green. |
| " 16 | Croydon—Horse Hire | Rural District Council | Clerk, Council Offices, Town Hall, Fell Road, Croydon. |
| " 16 | Earlestown, Lancs—Street Works | Newton-in-Makerfield U.D.C. | Surveyor, Town Hall, Earlestown. |
| " 16 | South Shields—Materials | Corporation | S. E. Burgess, Borough Engineer, Chapter Row, South Shields. |
| " 16 | Isleworth—Making-up Roads | Urban District Council | P. G Parkman, Engineer, Town Hall, Hounslow, W. |
| " 16 | London, S.W.—Granite Spalls | Wandsworth Guardians | F. W. Piper, Clerk, Union Offices, St. Johns' Hill, Wandsworth. |
| " 17 | Croydon—Making-up Roads | Rural District Council | E. J. Gowen, Clerk, District Council Offices, Town Hall, Croydon. |
| " 17 | Greenwich—Kerb | Borough Council | Borough Surveyor, Town Hall, Greenwich Road, S.E. |
| " 17 | New Barnet—Materials, &c | Urban District Council | H. York, Surveyor, Council Offices, Station Road, New Barnet. |
| " 18 | Ashford, Kent—Road Works | Urban District Council | W. Terrill, 5 North Street, Ashford, Kent. |
| " 19 | Tamworth—Granite | Rural District Council | H. J. Clarkson, 22 Church Street, Tamworth. |
| " 21 | Newhaven Sussex—Granite | Urban District Council | Surveyor, Council Offices, Newhaven. |
| " 21 | Paddington—Making-up and Paving Roads | Borough Council | E. B. B. Newton, Borough Surveyor, Town Hall Paddington, W. |
| " 22 | Lytchett Minster, Dorset—Roads, &c. | Sir Elliott Lees | R. T. S. Seymour, Surveyor, Wimborne |
| " 23 | Blackpool—Stone | — | J S. Brodie, Borough Surveyor, Town Hall, Blackpool. |
| " 24 | Batley, Yorks—Street Works | Town Council | O. J. Kirby, Borough Surveyor, Branch Road, Batley. |
| " 26 | Wigan—Roads, &c. | Burial Board | W. B. Johnson & Son, 31 King Street, Wigan. |
| " 31 | Dunstable—Steam Rolling | Town Council | G. Simcox, Borough Surveyor, Town Hall, Dunstable. |
| | **SANITARY:** | | |
| Sept. 10 | Pudsey, Yorks—Sewers | Corporation | J. Jones, Borough Surveyor, Church Lane, Pudsey. |
| " 12 | Downpatrick, Ireland—Sewer | Rural District Council | Clerk, Council Offices, Downpatrick. |
| " 12 | Ulverston—Relaying Sewers | Urban District Council | Surveyor, Theatre Street, Ulverston. |
| " 12 | Wakefield—Sewer, &c. | — | City Surveyor, Town Hall, Wakefield. |
| " 12 | Worsborough, Yorks—Sewer | Urban District Council | J. Whitaker, Surveyor, Saville House, Worsborough Bridge. |
| " 16 | Carlton, Notts—Sewer | Urban District Council | R Whitbread, Surveyor, Station Road, Carlton. |
| " 17 | Greenwich—Making Entries into Sewers | Borough Council | Borough Surveyor, Town Hall, Greenwich Road, S.E. |
| " 17 | Croydon—Sewers, &c. | Rural District Council | R. M. Chart, Union Bank Chambers, Croydon. |
| " 18 | Dringhouses, Yorks—Sewerage Works | Bishopsthorpe R.D.C. | Fairbank & Son, Engineers, Lendal Chambers, York. |
| " 19 | Harrogate—Drainage Works | — | E. W. Dixon, 5 Prospect Crescent, Harrogate. |
| " 22 | Denbigh—Sewerage Works | Mayor and Corporation | B. Denton & Partners, Engineers, Palace Chambers, Westminster, S.W. |
| " 23 | Easingwold, Yorks—Sewerage Works | Rural District Council | Fairbank & Son, Engineers, Lendal Chambers, York. |
| " 26 | Wigan—Drains, &c. | Burial Board | W. B. Johnson & Son, 31 King Street, Wigan. |
| | **TIMBER:** | | |
| Sept. 12 | Merthyr Tydfil, Wales—Timber, Deals, &c. | Hills Plymouth Co., Ltd | Secretary, Hills Plymouth Co., Ltd., Merthyr Tydfil |
| " 14 | Egypt—Timber for Wagons | Egyptian State Railways | Commrcl. Intelligence Branch, Bd. of Trade, 50 Parliament St., S.W. |
| " 28 | London, E.C.—Telegraph Poles | — | S. C. Hoolley, 17-19, Bedford Street, London, W.C. |

# List of Competitions Open.

| DATE OF DELIVERY. | DESIGNS REQUIRED. | AMOUNT OF PREMIUM. | DEPOSIT REQUIRED FOR CONDITIONS, &C. | BY WHOM ADVERTISED. |
|---|---|---|---|---|
| Sept. 12 | Stonehaven, Scotland—Alterations and Additions to Town Hall. | — | — | G. Murdoch, Borough Surveyor, Stonehaven. |
| " 12 | Howden, Yorks—Sewerage Improvement | £15 and commission. | — | H. Green, Clerk, Council Offices, Howden. |
| " 15 | Tamworth—Public Library | £20, £10, £5 | — | J. Matthews, Town Clerk, Bolebridge Street, Tamworth. |
| " 22 | Ayr—Hospital, &c. | — | — | J. E. Shaw, Clerk, Lunacy Board, County Buildings, Ayr. |
| " 25 | Earlestown, Lancs—Memorial Monument | £10. | — | C. Cole, Hon. Sec., South African War Relief Fund Committee, Town Hall, Earlestown. |
| " 26 | Leyland, Lancs—Laying-out Land, &c. | £15 15s. | — | M. H. Wilkinson, 21 Towngate, Leyland. |
| " 29 | Brighton—Hospital | £50, £30, £20. | £1 1s. | L. Holmes, 76 West Street, Brighton. |
| " 30 | Dublin—Workmen's Cottages | £20. | — | F. B. Ormsby, Secretary, Kingsbridge Terminus, Dublin. |
| Oct. 1 | Heywood—Library | £30, £20, £10. | £1 1s. | J. A. Settle, Borough Engineer, Municipal Buildings, Heywood. |
| " 2 | Bromley, E.—Public Library | £75, £25. | 10s. 6d. | H. Heckford, Borough Surveyor, Council Offices, High Street, Poplar. |
| " 7 | Saltwood—Sewage Disposal | £31 10s. | — | R. Lonergan, 11 Cheriton Place, Folkestone. |
| " 12 | Rawtenstall—Free Library, &c. | £100, £50, £30. | £2. | A. W. Lawson, Borough Surveyor, Municipal Offices, Rawtenstall. |
| Nov. 21 | Sunderland—Additions and Alterations to Town Hall. | £100, £50, £25. | £5. | J. W. Moncur, Borough Engineer, Town Hall, Sunderland. |
| 1904. Mar. 31 | Vienna—Machinery to Lift Boats on Canal | 100,000, 75,000 and 50,000 kronen. | — | Austro-Hungarian Consulate-General, 22 Laurence Pountney Lane, E.C. |

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PHOTO-COPIES.

MODELS OF BUILDINGS, &c.

LITHO PRINTING.

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**98, GRAY'S INN ROAD, W.C.**

*(Adjoining Holborn Town Hall).*

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(2)

## Appointments Wanted.

*The charge for Advertisements under this heading is 1s. 6d. per insertion not exceeding four lines, and 6d. per line afterward, prepaid. Three insertions may be had for the price of two. Advertisements must reach the Office not later than 5 o'clock on Monday.*

ARCHITECT'S ASSISTANT (22) wants SITUATION. Six years' experience. Quantities, abstracting and billing. Drawings from rough sketches, details, specifications, surveving, levellings, and office routine. Salary 25s.—Box 2542, Builders' Journal Office, 9, East Harding Street, Fetter Lane, E.C.

ARCHITECT'S JUNIOR ASSISTANT desires re-engagement. Accurate draughtsman and tracer, working drawings levelling, and surveying. Good references.—H. A., 2, Rosebery Terrace, Crouch End, N.

AS CLERK OF WORKS. Long varied experience in the trade. Structural Steel Work, Concrete, Brick, and Stone. Used to large works. Good testimonials, &c.—Box 2549, Builders' Journal Office, 9, East Harding Street, Fetter Lane, E.C.

BUILDER AND DECORATOR'S or CONTRACTOR'S CLERK (22), Certificated, desires Engagement. P.c. jobbing accounts, tracing, office routine, outdoor supervision. Energetic, excellent references, moderate salary. Disengaged. — P. W., 1, Lawn Villas, Worthing.

CARPENTER AND JOINER, 14 years' experience in Building and Timber Trades, seeks Situation as Working Manager of Small Business or Timber Yard, or as Assistant to Builder. Would Travel part time, assist with Books, &c., if required. Knowledge of Wood-working Machinery, Lathe, Gas Engine, &c. Age 31. Abstainer. Excellent references. Moderate salary.—"Beltana," 2, Park Road, Gravesend.

CLERK OF WORKS or GENERAL FOREMAN Disengaged. Experienced and well up with all trades. Good draughtsman. Energetic. 33. Town or Country.—H., 18, Queensmill Terrace, Fulham Palace Road, Fulham, S.W.

ENGINE DRIVER requires Berth. Can do all repairs. Has had seven years' workshop experience. Highest references.—C. B., 1, Petley Road, Hammersmith.

GENERAL FOREMAN, aged 32, seeks ENGAGEMENT. Reliable, energetic, good manager, and experienced in all branches. Undeniable references.—W. T. C. Bierton, Aylesbury, Bucks.

GOOD MASON wants Job. Abstainer. Good draughtsman. Capable of setting out. References. — Mason, Stone Works, Frinton-on-Sea, Essex.

JUNIOR ASSISTANT requires Engagement. Student R.I.B.A, preparing for Final Examination. — E. Hastewell, The Grange, Haltwhistle.

PLUMBER and FITTER wants PIECE-WORK. Own plant. Good personal references from architect and builder finishing large job in West End.—Plumber, 114, Clifton Road, Norbiton.

STAIRS and RAILS. — Re-engagement wanted by a thorough practical Man, by the hour or piecework. Good references.—J. Dyer, 69, Bemerton Street, Copenhagen Street, N.

WORKING GENERAL FOREMAN seeks re-engagement. Thoroughly experienced in all branches; good references; town or country; trade, carpenter and joiner.—Address, J. B., 62, Davenport Road, Catford, S.E.

## Appointments Vacant.

ARCHITECT'S COMPETENT ASSISTANT required immediately (Staffordshire); salary commencing 30s.—Apply, stating age, experience, and enclosing references or testimonials, to Box 2561, Builders' Journal Office, 9, East Harding Street, Fetter Lane, E.C.

JUNIOR DRAUGHTSMAN, one used to measuring up and iron work preferred.—Apply, by letter, stating age and experience and salary required, to X., c/o Spiers and Pond, Ltd., Advertising Agents, 35, New Bridge Street, E.C.

WANTED, SMART Junior DRAUGHTSMAN in Engineering Works, London. Must understand building construction. Preference given if knowledge Shorthand and Typewriting.—Apply, stating qualifications, age, salary required, Box 2544, Builders' Journal Office, 9, East Harding Street, Fetter Lane, E.C.

WANTED Temporary First-class ARCHITECT'S ASSISTANT for working and detail drawings, quantities, abstracting, &c. State age, experience, and salary required.—H., 62, Northbrook Street, Newbury, Berks.

## Miscellaneous.

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ALL TECHNICAL EXAMINATIONS.—First place in every open competition during last two years. Correspondence or Resident Tuition. Vacancy for Articled Pupil.—G. A. T. Middleton, 19, Craven Street, W.C.

MORTGAGE SECURITIES WANTED from £1,000 to £25,000 for large fund immediately available for advances.—Apply W. P. Neal, Esq., Pinner's Hall, Great Winchester Street, London, E.C.

QUANTITIES. A course of Correspondence Lectures on the preparation of Quantities on the most approved London System WILL COMMENCE SEPTEMBER 28th. For particulars apply Box 2546, Builders' Journal, 9, East Harding Street, Fetter Lane, E.C.

R.I.B.A. EXAMS. — Personal and Correspondence tuition; courses of any duration. Apply for syllabus to Mr. A. G. Bond, B.A.Oxon., A.R.I.B.A., 115, Gower Street, London, W.C. (late Howgate and Bond).

STRUCTURAL STEELWORK. — Structural engineer resident in London receives evening pupils for theory and practice of design of roof, girder, and bridge work, and undertakes the designing of all types of structures.—Address, Box 2554, Builders' Journal Office, 9, East Harding Street, E.C.

TO ARCHITECTS, BUILDERS, AND OTHERS.—Plans prepared at lowest charges; Tracings from 5s. Specifications, &c., accurately typewritten, 1s. per 1,000 words.—D. R. Mathison, 39a, Algernon Road, Hendon.

WANTED, Rivington's Building Construction, single volumes, or complete.—Box 2566, Builders' Journal Office, 9, East Harding Street, Fetter Lane, E.C.

## Miscellaneous Articles for Sale.

ARCHITECTS, BUILDERS. Parquet and Wood Block Flooring. Best material. Experienced workmanship. Low prices. Builders' blocks laid in special composition.—William Ludlow, 84, Shern Hall Street, Walthamstow.

FOR SALE.—One 12-h p. Nominal CROSSLEY GAS ENGINE. One TRYING-UP PLANING MACHINE. One 4-CUTTER MOULDING MACHINE, 1 MOULDING MACHINE. One TENONING MACHINE, 1 CIRCULAR SAW and CROSS CUT. One BAND SAW and FRAME SAW. By Ransome, Smith, of Chelsea, and Northrop, of Fulham.—W. A. & Co., 8, Mount Street, W.

LIFTS.—WM. AUG.'S GIBSON, Ltd., formerly President of American Elevator Co., later Managing Director Otis Elevator Co., Ltd. Temple Bar House, 28, Fleet Street, London, E.C.

**6,000 TEA SETS, 3/6. 4,000 DINNER-SETS, 7/6 each. (Finest quality.) The Two Services sent for 10/6. Builders and Furnishers requiring China contracts, should write for quotations.—ARTHUR J. HULL, Dept. 71, King Street Pottery, Longton, Staffs.**

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OF
# OLD LONDON.

Reproductions of the fine Sketches of Mr. F. L. Emanuel by the Rembrandt Process can still be obtained, but owing to the fact that in some instances only copies slightly soiled are left, a large reduction has been made in the prices.

## THE COMPLETE SET 10/6

(18 Pictures).

ALL LOVERS OF DICKENS should obtain copies of these pictures, as they form a lasting record of the London he knew and wrote of so delightfully, and also many of the places reproduced are actually mentioned in his works.

The Original Plates have been destroyed, and no further copies can be produced; the pictures are therefore not only unique, but likely to become of considerable value.

**Single Copies at the following Prices:—**

| | |
|---|---|
| 1. **The "Old Horse and Groom,"** Back of Holborn - above - Bar (since demolished). | 6d. each. |
| 2. **Holywell Street,** from St. Clement Dane's Church (since demolished). | 1s. 0d. each. |
| 3. **The "Old Bell,"** Holborn (since demolished). | 1s. 0d. each. |
| 4. **Leather Lane,** Holborn. | 1s. 0d. each. |
| 5. **Davies Street** (since demolished). | 6d. each. |
| 6. **Fetter Lane,** View from Holborn. | 6d. each. |
| 7. **King Street,** Westminster (since demolished). | 1s. 0d. each. |
| 8. **Staple Inn,** Holborn. | 1s. 0d. each. |
| 9. **Milford Lane,** Strand, and Booksellers' Row, looking West (since demolished). | 6d. each. |
| 10. **Lincoln's Inn Fields.** | 1s. 0d. each. |
| 11. **Archway,** Portugal Street, Lincoln's Inn Fields. | 6d. each. |
| 12. **Old Houses in Strand.** | 6d. each. |
| 13. **Exchange Court,** Strand. | 6d. each. |
| 14. **Foubert's Place,** Regent Street. | 1s. 0d. each. |
| 15. **Rupert Street, W.** | 6d. each. |
| 16. **Wych Street,** Strand (since demolished). | 1s. 0d. each. |
| 17. **Booksellers' Row,** looking East (since demolished). | 1s. 0d. each. |
| 18. **George Court,** Strand. | 6d. each. |

OR

***The Complete Set for 10/6.***

APPLY TO

TECHNICAL JOURNALS, Ltd.,
9, East Harding Street,
Fetter Lane, London, E.C.

**NOTE.—Advertisements for this page must reach the Office not later than 5 o'clock p.m. on Monday.**

# Tenders.

*Information from accredited sources should be sent to "The Editor" at latest by noon on Monday if intended for publication in the following Wednesday's issue Results of Tenders cannot be accepted unless they contain the name of the Architect or Surveyor for the work.*

*Addressed postcards on which lists of tenders may be stated will be sent post free on application to the Manager,* Builders' Journal, 9, *East Harding Street, E.C.*

**Abertillery.**—For the erection of steam laundry, stack, stables, and other buildings, for the Abertillery Steam Laundry Co., Ltd. Mr. George C. Hillard, architect, Market Chambers, Abertillery. Quantities by architect:—

| | |
|---|---|
| J. Hatherley, Bristol | £2,347 0 0 |
| Burgoyne & Co., Blaenavon | 2,037 0 0 |
| N. Bagley, Abertillery | 1,895 6 6 |
| E. C. Jordan, Newport | 1,893 7 0 |
| D. W. Richards,* Newport | 1,850 0 0 |

* Accepted.

**Chatham.**—For (1) the supply and erection of the iron and steel work and a timber landing stage required for the extension of the Sun Pier; (2) for repairing and painting existing pier, for the Town Council. Mr. A. T. Walmsley, engineer, 9, Victoria Street:—

| | No. 1. | No. 2. |
|---|---|---|
| Pedrette & Co., London, N. | £5,258 15 0 | £1,428 10 0 |
| Sir Hiram Maxim Electrical and Engineering Co., Ltd.* | 3,898 0 8 | 934 17 3 |

* Accepted.

**Hale (Cheshire).**—For sewerage works, for the Hale (Cheshire) Urban District Council. Mr. F. J. Lobley, A.M.I.C.E., engineer, Hale:—

| | Original estimate. | A. | B. | C. |
|---|---|---|---|---|
| S. P. Fairhurst, Altrincham | £2,433 | £2,392 | £2,392 | £2,302 |
| W. Jowett, Prescot | 2,163 | 2,127 | 2,109 | 2,082 |
| G. Bozson, Ashton-on-Mersey | 1,899 | 1,750 | 1,770 | 1,730 |
| Marshall & Son, Ashton-under-Lyne | 1,849 | 1,822 | 1,820 | 1,789 |
| S. Hutton, Bowdon | 1,788 | 1,755 | 1,772 | 1,674 |
| Naylor & Sons, Hulme | 1,786 | 1,663 | 1,687 | 1,660 |
| Edmondson & Wyatt, Oldham | 1,780 | 1,751 | 1,780 | 1,656 |
| J. Hamilton & Son, Altrincham | 1,690* | 1,657 | 1,677 | 1,596 |
| S. Johnson & Son, Manchester | 1,665 | — | — | — |

* Accepted.

[The original estimate was for stoneware pipes with double joints to the sewage sewer as recommended and specified by the engineer; alternative tender A, for single-lined joints to stoneware sewer; alternative tender B, for best Lancashire earthenware pipes with Hassall's single-lined joint to sewage sewer; alternative tender C, for ordinary socketed earthenware pipes to sewage sewer similar to those to be used for the surface-water sewers.]

**Chipping Ongar (Essex).**—For the erection of children's homes at Chipping Ongar, for the Guardians of Hackney Union. Mr. W. A. Finch, architect, 76, Finsbury Pavement, E.C.:—

| | |
|---|---|
| J. Appleby & Sons | £59,835 0 |
| Kilby & Gayford | 57,737 0 |
| Perry Brothers | 56,890 0 |
| Perry & Co., Ltd. | 56,885 0 |
| Shurmur & Sons | 56,781 0 |
| A. Porter | 55,742 0 |
| A. Monk | 54,233 0 |
| B. E. Nightingale | 53,150 0 |
| Ferguson & Co. | 52,744 0 |
| Sheffield Brothers | 50,571 0 |
| F. & E. Davey | 50,469 0 |
| Mallet & Wood | 50,223 11 |
| Leslie & Co., Ltd. | 49,970 0 |
| Kirk & Randall | 49,934 0 |
| W. Johnson & Co. | 49,877 0 |
| H. Lovatt | 49,600 0 |
| J. Chessum & Sons | 49,325 0 |
| C. G. Hill | 48,950 0 |
| H. Willcock & Co. | 48,861 0 |
| H. Wall & Co. | 48,660 0 |
| Thomas & Edge | 48,320 0 |
| Kerridge & Shaw | 47,878 0 |
| Foster & Son | 47,444 0 |
| C. Wall | 47,300 0 |
| W. Lawrence & Son | £46,957 0 |
| McCormick & Sons,* Northampton Street, Essex Road, N. | 45,987 0 |
| W. Wallis | 45,986 0 |

* Accepted.

**Kettering.**—For the construction of the embankment for a storage reservoir, together with valve tower, outlet culvert, waste-water channel, and other works near the village of Thorpe Melsor, about three miles from Kettering, for the Rettering Urban District Council. Mr. T. Reader Smith, engineer, Market Place, Kettering:—

| | |
|---|---|
| J. F. Price, Nottingham | £26,549 0 0 |
| T. J. Dixon & Son, Castleford | 23,984 2 6 |
| J. H. Macdonald, Blaina | 22,676 1 8 |
| C. Chamberlain, Leicester | 22,564 13 9 |
| T. Smart, Nottingham | 22,299 0 0 |
| H. Ashley, Mansfield | 22,251 4 0 |
| B. Cooke & Co., Westminster | 21,866 0 0 |
| G. Young, Irchester | 21,768 6 8 |
| B. Firth, York | 21,173 9 0 |
| G. Bell, Tottenham | 20,571 0 0 |
| J. Hodson & Son, Nottingham | 20,010 2 2 |
| S. Wood, Bristol | 19,685 7 6 |
| W. H. Pickin, Rickmansworth | 19,500 0 0 |
| Pethick Brothers, Westminster | 18,866 14 7 |
| J. Moffatt, Manchester | 18,610 10 1 |
| G. Henson, Wellingborough | 18,600 0 0 |
| W. Jones & Son, Neath | 17,354 10 4 |
| A. Jewell, Market Harborough | 16,850 0 0 |
| W. Cunliffe, Kingston-on-Thame | 15,990 0 0 |
| F. Barlow, Rothwell, Kent | 15,800 0 0 |

**Maesteg (Wales).**—For the following works, for the Maesteg Urban District Council: for the construction of certain works in connection with a storage reservoir at Blaen-cum-Clowyn, in the parish of Cwmdu, in the county of Glamorgan, to hold 30,000,000 gals., including an earthwork impounding dam, overflow, by-wash, tunnel, clay paddle wall, rubble pitching, soiling slopes, valve tower, and footbridge, and the provision of all labour and materials, &c. Mr. Joseph Humphreys, C.E., engineer, Town Hall Chambers, Maesteg:—

| | |
|---|---|
| H. Hill, Maesteg | £36,662 |
| Barnes & Chaplin, Cardiff | 31,531 |
| W. Jones & Sons,* Neath | 28,347 |
| J. E. Evans, Cardiff | 26,367 |
| J. Riley, Cheltenham | 23,731 |
| G. Rutter, Barry | 19,231 |

* Accepted. [Engineer's estimate, £27,645 10s.]

**Longton (Staffs).**—For the construction of detritus and settling tanks, supply and efficient channels, culverts, earthenware pipe sewers, manholes, and other works required for sewage-disposal works, for the Town Council. Mr. J. W. Wardle, A.M.I.C.E., borough engineer and surveyor:—

| | |
|---|---|
| J. D. Nowell & Sons, Westminster | £9,974 |
| J. Byrom, Bury | 9,849 |
| H. P. Embrey Fenton | 8,306 |
| J. T. Dawson, Buxton | 7,592 |
| W. Williams, Etruria | 7,200 |
| S. J. Forsyth, Fenton | 6,995 |
| F. Barde, Stoke-on-Trent | 6,938 |

**London, N.**—For proposed smithy and engineer's workshops, Wimborne Street, New North Road, Hoxton, for Mr W. Hurst. Mr. A. W. Hudson, P.A.S.I., architect, 87, Finsbury Pavement, E.C.:—

| | |
|---|---|
| J. & W. T. Inkpen | £1,240 0 0 |
| S. J. Scott | 1,120 0 0 |
| Hawkey & Oldman | 1,032 0 0 |
| E. Lawrence & Sons | 998 0 0 |
| J. Grovers & Sons | 974 0 0 |
| E. H. Capon | 897 2 5 |

**Lynton (Devon).**—For providing and laying about 2,300yds. lineal of 8in. cast-iron water-main, together with the requisite sluice and air valves, hydrants, the erection of a filtering station, and other works in connection with the Lynton water supply, for the Lynton Urban District Council. Mr. W. H. Chowins, engineer, Town Hall, Lynton:—

| | |
|---|---|
| Rafarel & Co., Barnstaple | £3,237 8 8 |
| F. Mills, Camborne | 2,953 11 0 |
| R. Neal, Plymouth | 2,505 0 0 |
| B. Jones, Lynton | 2,331 12 10 |
| G. L. Gunn,* Lynton | 2,235 7 10 |

* Accepted.

**Oxted (Surrey).**—For the erection of stables, coachman's and gardener's houses, and other buildings, for Mr. Max Michaelis. Messrs. F. S. Brereton & Son, architects. Quantities by Mr. E. G. Hardcastle:—

| | |
|---|---|
| W. & E. Noakes | £13,025 |
| E. J. Saunders | 12,914 |
| J. Carmichael | 12,700 |
| Killby & Gayford | 12,420 |
| W. H. Wagstaff & Son | 11,998 |

**Portsmouth.**—For the erection of new stores, &c., for Messrs. Pike, Spicer & Co., High Street, Portsmouth. Messrs. Rake & Cogswell, Prudential Buildings, Portsmouth, architects:—

| | |
|---|---|
| Light & Son | £1,565 |
| Salter | 1,527 |
| A. W. Bevis | 1,490 |
| H. Jones | 1,469 |
| J. Crockerell | 1,440 |

[All of Portsmouth.]

**Pontypridd.**—For the construction of about 340yds. of retaining and fence walls and widening and forming carriageways and footways on the Cardiff Road, Treforest, for the Pontypridd Urban District Council. Mr. P. R. A. Willoughby, A.M.I.C.E., engineer and surveyor:—

| | |
|---|---|
| Barnes, Chaplin & Co., Cardiff | £1,588 2 6 |
| A. G. Cullins, Cadoxton, Barry | 1,293 11 0 |
| R. Y. Mathias,* Pontypridd | 1,245 10 7 |

* Accepted. [Surveyor's estimate, £1,250.]

**Rochdale.**—For the erection of the Queen Victoria Memorial, Vicarage Road. Messrs. Woodhouse, Willoughby & Langham, architects, 100, King Street, Manchester. Quantities by architects:—

| | |
|---|---|
| C. Brierley | £4,295 |
| Neill & Sons | 4,100 |
| J. & J. Coates | 4,055 |
| J. Byron | 3,830 |
| Thompson & Brierley | 3,808 |
| W. A. Peters | 3 725 |
| Taylor & Co. | 3,700 |
| Hendesby | 3,699 |
| Ashworth & Wolfenden | 3,589 |
| R. & T. Howarth,* Rochdale | 3,570 |

* Accepted.

**Southampton.**—For the erection of new classrooms over the existing classrooms at the Hartley University College, Southampton, together with a bridge and approaches for connecting the buildings on the east side of the back of the walls with the main buildings of the university. Messrs. W. H. Mitchell, Son & Gutteridge, architects, 9, Portland Street, Southampton:—

| | New classrooms. | Bridge, &c. |
|---|---|---|
| Golding & Ansell | £2,000 | £876 |
| Jenkins & Sons | 1,686 | 793 |
| Udall & Co. | 1,620 | 838 |
| F. Walter | 1,585 | 738 |
| H. Stevens & Co. | 1,548 | 844 |
| Dyre & Sons | 1,523 | 804 |

[All of Southampton.]

**Wimbledon.**—For the erection of two blocks of flats in connection with the Soldiers' and Sailors' Families Association, Queen Alexandra's Home, Wimbledon. Messrs. Ernest George & Yeates and Mr. C. E. Lancaster Parkinson, architects:—

| | |
|---|---|
| W. Willett, London | £27,870 |
| Martin, Wells & Co., London | 24,199 |
| L. H. & R. Roberts, London | 23,997 |
| J. Long & Sons, Bath | 23,680 |
| J. Britton, London | 23,500 |
| W. J. Renshaw, London | 22,819 |
| H. L. Holloway, London | 22,528 |
| C. F. Kearley, London | 22,487 |
| W. Johnson & Co., London | 22,463 |
| Simpson & Sons, London | 22,343 |
| Carmichael, London | 21,900 |
| J. C. Tennant & Co.,* London | 20,819 |

* Accepted.

**Woolmer Forest (Hants).**—For the erection of a terrace of ten six-roomed dwelling-houses at Whitehall, Woolmer Forest, for Mr. Woolmer White. Messrs. Rake & Cogswell, architects, Prudential Buildings, Portsmouth:

| | |
|---|---|
| Rudd & Sons, Grantham | £5,080 |
| C. Baker, Selbourne | 4,485 |
| Strange & Sons, Tunbridge Wells | 4,335 |
| Chapman & Lowry, Greyshot, Hants | 4,250 |
| G. Gardner, Haslemere | 4,240 |
| G. Kenys, Greatham, Liss | 3,875 |
| H. Tribe, Rake, Liss | 3,800 |
| W. Mould, Petersfield | 3,446 |
| Whiteman & Gauntlet, Liphook | 3,009 |
| R. Foster, Greyshot | 2,772 |

(*Continued on* p. xviii.)

*Guaranteed Gearing*

ROBERT ADAMS,

65 & 67, Newington Causeway, LONDON, S.E.

The Originator and Leading Maker of the Modern System of Ventilating Gearing.

HIGHEST AWARDS AT PARIS, 1900.

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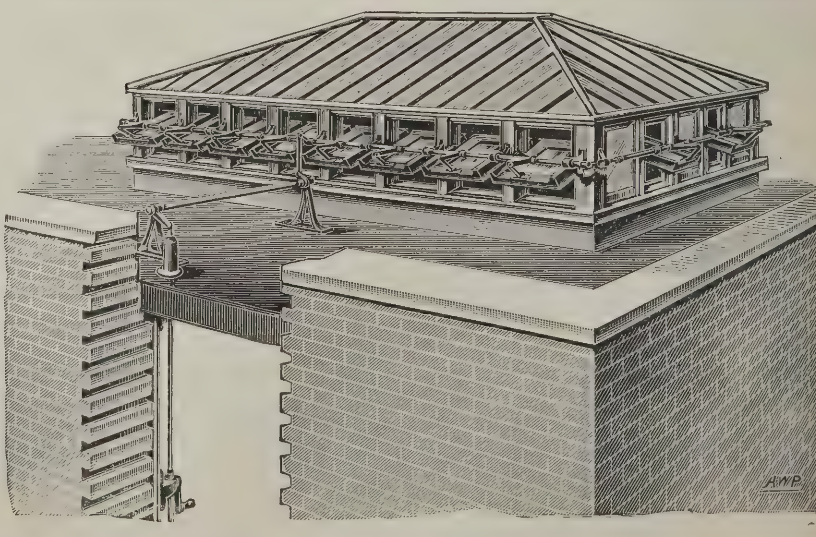

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TENDERS (*cont. from* p. xvi).

**Ingatestone (Essex).**—For additions and alterations to the malting, for Mr. M. Quinn. Messrs. Clare & Ross, architects, 1, West Street, London E.C., and Westcliff-on-Sea :—

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| Smith & Sons, Witham | £265 |
| F. Johnson,* Chelmsford | 198 |

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**Kelling, near Holt (Norfolk).**—For the erection of a doctor's house and lodge, for the Kelling Sanatorium Committee. Messrs. Clare & Ross, architects, London and Westcliff-on-Sea :—

| | House. | Lodge. |
|---|---|---|
| Mr. Blyth, Foulsham, Norfolk | £619* | £241† |

* Accepted. † Deferred.

**Kelling, near Holt (Norfolk).**—Accepted for the erection of two new twelve-bed pavilions at the Consumptive Sanatorium, for the Building Committee. Messrs. Clare & Ross, architects London and Westcliff-on-Sea :—

Mr. Blyth, Foulsham, Norfolk £591 13s. 6d. for one and £637 for the other.

**London, E.**—For the U.M.F. School Church, Highams Park, E. Messrs. George Baines, F.R.I.B.A., and Reginald Palmer Baines, architects, 5, Clement's Inn, Strand, W.C. :—

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| F. Gough & Co. | £2,364 |
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| Sands, Palmer & Co.,* 9, Canning Road, Walthamstow | 1,990 |

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**Pontlottyn (Glamorgan).**—Accepted for rebuilding business premises at Pontlottyn, Glam.. for Messrs. H. Woodley & Co., Cardiff. Mr. D. Pugh-Jones, F.S.I., architect and surveyor, Queen's Chambers, Cardiff :—

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| Messrs. G. Couzens & Co., Riverside Works, Cardiff | £715 |

## Coming Events.

**Wednesday, Sept. 9.**
INSTITUTE OF SANITARY ENGINEERS.—Meetings of Examination and Literary Committee at 3.30 p.m , of General Purposes and Finance Committee at 4.15 p.m., and of Election Committee at 5.15 p.m.

**Saturday, Sept. 12.**
INCORPORATED BRITISH INSTITUTE OF CERTIFIED CARPENTERS.—Visit to the new Public Offices, Parliament Street, S.W., at 3 p.m.

**Monday, Sept. 14.**
SANITARY INSTITUTE (Lectures and Demonstrations for Sanitary Officers, Part I.).—Mr. E. J. Steegmann on "Mechanical Physics: Laws of Motion, Hydraulics, &c.," at 7 p m.

**Wednesday, Sept. 16.**
SANITARY INSTITUTE (Lectures and Demonstrations for Sanitary Officers, Part I.).—Mr. E. J. Steegmann on "Natural Forces: Light, Heat, Electricity; Chemistry," at 7 p.m.

**Friday, Sept. 18.**
SANITARY INSTITUTE (Lectures and Demonstrations for Sanitary Officers, Part I.).—Mr. E. J. Steegmann on "The Atmosphere: Pressure and Composition; Air; Combustion and Respiration," at 7 p.m

**Saturday, Sept. 19.**
NORTHERN ARCHITECTURAL ASSOCIATION.—Excursion to Sunderland.

SANITARY INSTITUTE (Lectures and Demonstrations for Sanitary Officers, Part I.).—Inspection and Demonstration at "Wimbledon Sewage Works" at 3 p.m., conducted by C. H. Cooper.

**Monday, Sept. 21.**
SANITARY INSTITUTE (Lectures and Demonstrations for Sanitary Officers, Part I.).—Mr E. J. Steegmann on "Meteorology."

**Wednesday, Sept. 23.**
SANITARY INSTITUTE (Lectures and Demonstrations for Sanitary Officers, Part I.).—Mr. J. Priestley on "Sanitary Law"—I. at 7 p.m. Inspection and Demonstration in the "District of Islington and at the Borough Disinfecting Station," at 2 p m, conducted by James R. Leggatt.

## Bankruptcies.

[Abbreviations: R.O.—receiving order; P.E.—public examination; C.C.—county court; O.R.—official receiver; Adj.—Adjudication.]

DURING THE WEEK ending September 5th seven failures in the building and timber trades in England and Wales were gazetted.

J. T. EXLEY, plumber, Batley. Adj. August 24th.

A. W. GREEN, builder, Wokingham. R.O. and adj. August 24th.

T. HUGHES, joiner, builder and contractor, Birkenhead. R.O. and adj. August 26th.

J. GLANVILLE, plumber and contractor, Plymouth. R.O. and adj. August 27th.

W. KEEN & Co., builders, Walthamstow and Mitcham Adj. August 26th.

F. E. BEST (E. Dryland & Co.), builder, Ashford. P.E., Canterbury Guildhall, October 1st, at 10.

J. CAMERON, timber merchant, London, N. Adj. August, 26th.

H. BOOTH & Co., blind makers, Leicester. Adj August 26th,

G. R. H. WALES, builder, South Hackney. Adj. August 10th.

F. H. HOPKINS, builder and contractor, Brixton. Adj. July 29th.

T. HEWINS, organ builder, Stratford-on-Avon. Adj. August 25th.

G SPINK, quarryowner, Scotton. P.E., Courts of Justice, York, October 9th, at 11.

E. S. HAMMERTON, manufacturer of shop fronts, &c, Upton Park. First meeting, London Bankruptcy Court, September 11th, at 1. P.E., same, October 14th, at 12.

McRAE & Co., civil engineers, London, E.C. First meeting, Bankruptcy Court, September 14th, at 11. P.E., same, October 6th, at 12.

A. BURNETT, architect and surveyor, Wellington. R O and adj. August 24th. First meeting, Madeley C.C., September 9th, at 11.15. P.E., same, at 12.30.

G. H. HALL, road contractor, Sheffield. First meeting, O.R.'s, Sheffield, September 9th, at 12. P.E., Sheffield C.C., September 24th, at 2.

J. RAWLINS, builder, Upper Walthamstow. R.O. and adj. August 24th. First meeting, London Bankruptcy Court, September 9th, at 12. P.E., same, October 23rd at 11.

J. R. WINSTANLEY, quantity surveyor. Barrow-in-Furness. First meeting, O.R.'s, Barrow, September 9th at 10.30. P.E., Magistrates' Court, Barrow, October 2nd. at 3.

NOAKES & NOAKES, builders, Eastbourne. R.O. August 24th. First meeting, O.R.'s, 24, Railway Approach, London Bridge, September 9th, at 11 30. P.E., Eastbourne Town Hall, September 29th, at 2.30.

T. MATHER, painter and decorator, Birmingham. Adj. August 25th. First meeting, 174, Corporation Street, Birmingham. September 11th, at 12. P.E., Birmingham C.C., October 15th, at 2.

The following companies are to be wound up:—

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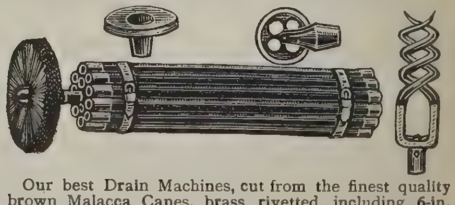

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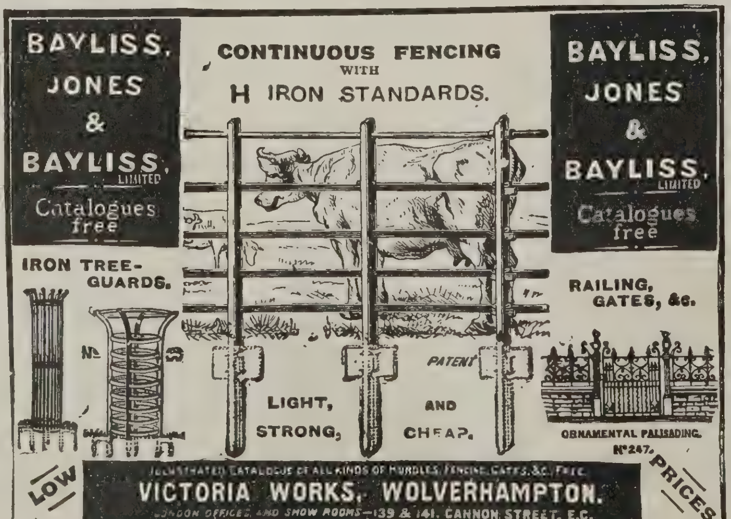

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# BUILDERS' JOURNAL

AND ARCHITECTURAL RECORD.

September 16, 1903. Vol. 18, No. 449 9, East Harding Street, E.C

**A War Office Chimney.** In a London newspaper a few days ago it was stated that the War Office was erecting some yellow chimneys at Hampton Court utterly out of harmony with the rest of the structure, and that a protest had been lodged against their erection. We paid a special visit to Hampton Court to see this work of the official vandals, and found the statement to be absolutely false. One small chimney with four pots is just being completed at the stables end of the low range of buildings occupied by the Hussars, outside the western front. This chimney is quite properly built in stock bricks with red dressings and is treated exactly like the others. Naturally, it does not look old, but only a year or two will be needed to put it into perfect harmony with its neighbours. If people would keep their protests till there was some call for them it would be better for all concerned.

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**An Irish Question.** Irish architects are still very much aggrieved about the new college of science for Dublin. Mr. Ashlin, the president of the Royal Institute of Architects of Ireland, has now spoken out strongly against the proposal to nominate an English architect for the work; especially against the idea of appointing an English and an Irish architect conjointly, because he believes that this latter proposal is simply a concession to soothe Irish feeling while in no wise really influencing the matter. For our own part, we do not call to mind many names of architects in Ireland who add special glory to modern architecture, but there are certainly a few who should not be passed over by the Treasury. Any balance of favour should be given to Irish architects in a case like this, which concerns a building for their own capital.

---

**Beautiful Scaffolding.** Scaffolding has changed very little for hundreds of years, and we may regard it as one of the beautiful relics of the Middle Ages, though the ardent archæologist may not think so. If one were to believe the average artist, art would be a thing that has been, but never is; a glory which we must look at through the haze of centuries. The ordinary artist, then, would not look for beauty among scaffolding: yet to eyes that will see, it is there. Things of the past have had praise enough and attention enough; the things of to-day cry for appreciation. The greatest artist is he who paints his own times, the artist who does not fail to look for beauty even in a hulk of steel or a builder's gantry. The very builder who erects the gantry will doubtless think that art belongs to the studio and the velvet coat, while being quite oblivious to the creation of his own workmen. The scaffold fixers have no thought of art when they are binding their poles together. But the artist whose eyes are open on the present sees something besides plain poles and ledgers bound with dirty rope: he sees a forest of pine needles standing like some great shield to the builder's work, crossed and recrossed, held and bound—brown shafts springing upwards against the red or grey of the building behind.

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**Competition Warning.** A short time ago an advertisement appeared in our columns inviting designs for a stone bridge over the Medway at Aylesford, and offering a premium of £100 for the best design, further details to be obtained from the town clerk of Maidstone. A correspondent informs us that he wrote for the particulars and was surprised to be only furnished with a plan showing the position of the bridge, it being stated that the height over high-water should be the same as at Rochester Bridge; but no section of the river was given, so that, of course, the plan of the site was useless. "Surely," says our correspondent, "the town council do not expect that competitors will go to the expense and trouble of taking the necessary levels in order to enable them to send in designs; this information should be furnished by the council. Otherwise the competition looks like a sham, being evidently intended to prevent others than local men competing. Perhaps you would kindly draw attention to this competition."

---

**The Philistine Architect.** Every architect starts in practice with the dignity, the honour, the reputation of his profession; to a small coterie he is an artist who does things because the wondrous spirit moves him from within, but to the great majority he is a professional man, who must not advertise himself like any tradesman. As between barrister and solicitor, a great gulf is fixed. Albeit there are architects (members of the Institute, maybe) who sell themselves to Mammon; a proceeding which it is orthodox to discountenance, that is, professionally. So accustomed are we to hear this view of the case, that any other view comes as a surprise; yet it comes this time from America, so perhaps we should not affect to be so surprised after all. The plea put forward on behalf of the engineer is equally applicable to the architect. Our engineer is to be assigned a place somewhere between a highly-skilled mechanic and a professional man consulted as an expert; a man of affairs conducting large enterprises. Our architect is essentially a professional man. But both have to make a start, and it is more likely a young man will have brains than money. So that, according to the new American creed, one of the first duties of every man is to let the world know what he is good for. If he can do a thing better than is generally done he should tell about it. There is no mincing the matter. But let not those architectural firms be forgotten to whom we had occasion to refer some time ago, those firms who sell their work like so much butter wrapped up in pretty paper.

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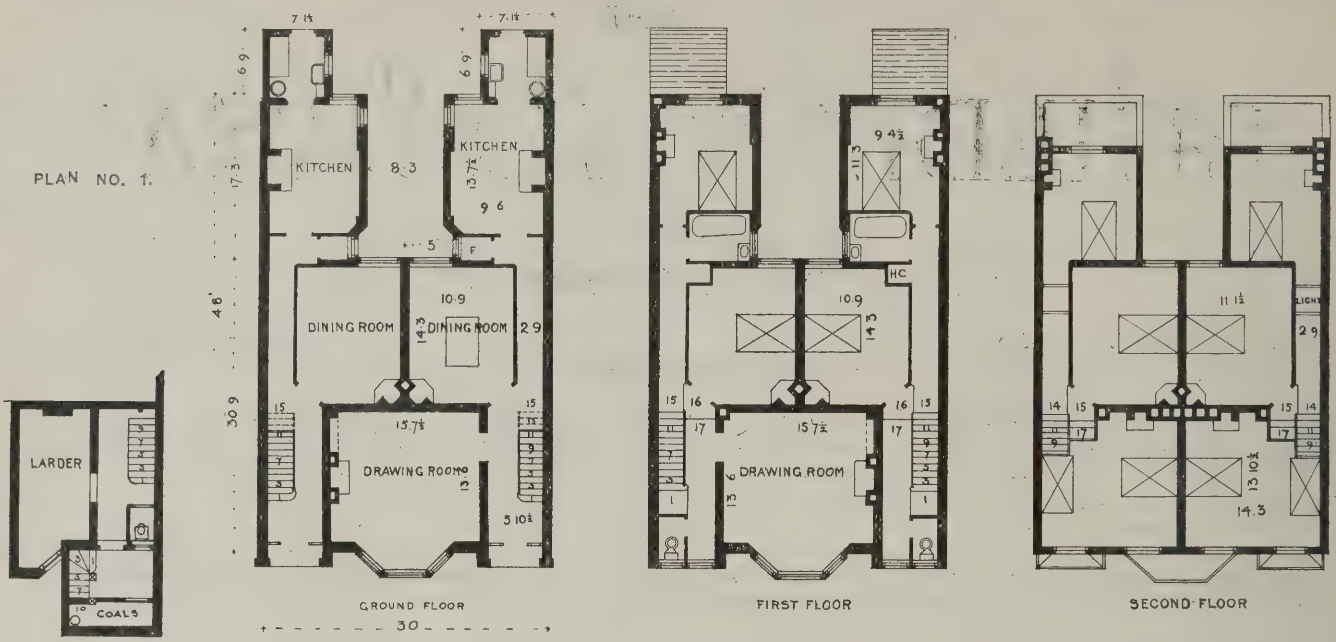
**M. Eiffel.** Reverting to our note last week in reference to the Eiffel Tower and its forthcoming demolition in 1910, it is interesting to observe that when M. Eiffel was but twenty-six years of age, just three years after having left the Ecole Centrale, he was entrusted with the erection of a large iron bridge at Bordeaux, where caissons worked under compressed air were introduced, almost for the first time in France. His great engineering skill manifested itself in the many other succeeding great structures with which his name is associated, notably the dome of Nice Observatory, 75ft. in diameter and weighing more than 100 tons, which floats within a circular trough. The idea of building a great iron tower was no new thing; the scheme had been mooted on several occasions; but it seems that the huge framework of Bartholdi's statue of Liberty, presented by France to the United States, where it now stands at the entrance to New York Harbour, suggested to M. Eiffel the wonderful erection for which he is mostly famous. Everyone knows that the tower is 300 metres high (985ft.), but it is not so generally known that 7,000 tons of iron, not steel, were used in its construction, that two and a half millions of rivets, weighing 450 tons, were needed, and that there were 12,000 working drawings. The cost was £200,000, of which £60,000 was voted by the State, M. Eiffel furnishing the remainder and estimating to reap his return during the twenty-years' concession—which he has doubtless already done handsomely. The legs measure about 250ft. at the base, while the platform at the top is 53ft. square. The total thrust on the foundations is 565 tons, not including wind-pressure; under a maximum wind-pressure the thrust is 875 tons.



# SOME NEW PLANS FOR DWELLING-HOUSES.

### By GEORGE LAU ENCE.

In one particular class of dwelling almost identically the same arrangements have been adopted for the past hundred years, particularly in 18ft. frontages, which form by far the greatest number of domestic dwellings built in the suburbs of London and elsewhere. Is there no possible chance or hope of improvement in the development of the plans generally designed for this apparently fixed 18ft. frontage? I think many other plans are possible in such a frontage that are superior to, and more convenient than, the stereotyped arrangement alluded to. The plans here reproduced are offered as such improvements.

Many of the plans are novel; they are solutions to problems which experienced architects have failed to solve; and the results cannot be arrived at by any other methods of planning.

*Plan No. 1.*—This is a pair of houses in a 30ft. frontage. The houses are intersecting continuous ground-floor dwellings. Some years ago I took out a patent for this style of plan, which I consider unique; it is surprisingly spacious and convenient for such a small frontage.

*Plan No. 2.*—This is a new style of plan for an 18ft. frontage. The improvement in the dining-room and bedroom over the usual style of plan will be seen at a glance, also the superior light obtained for the kitchen, to say nothing of the privacy secured.

*Plan No. 3.*—This is another improved style of plan for an 18ft. frontage, affording the same advantages as No. 2, besides giving a direct staircase light.

*Plan No. 4* (see p. 90).—This is a very spacious and superior plan, far in advance of anything of its kind that has hitherto been built of the same area and cubical measurement. It will be observed that it is almost semi-detached and could easily be made into a considerably larger house with the same ground area.

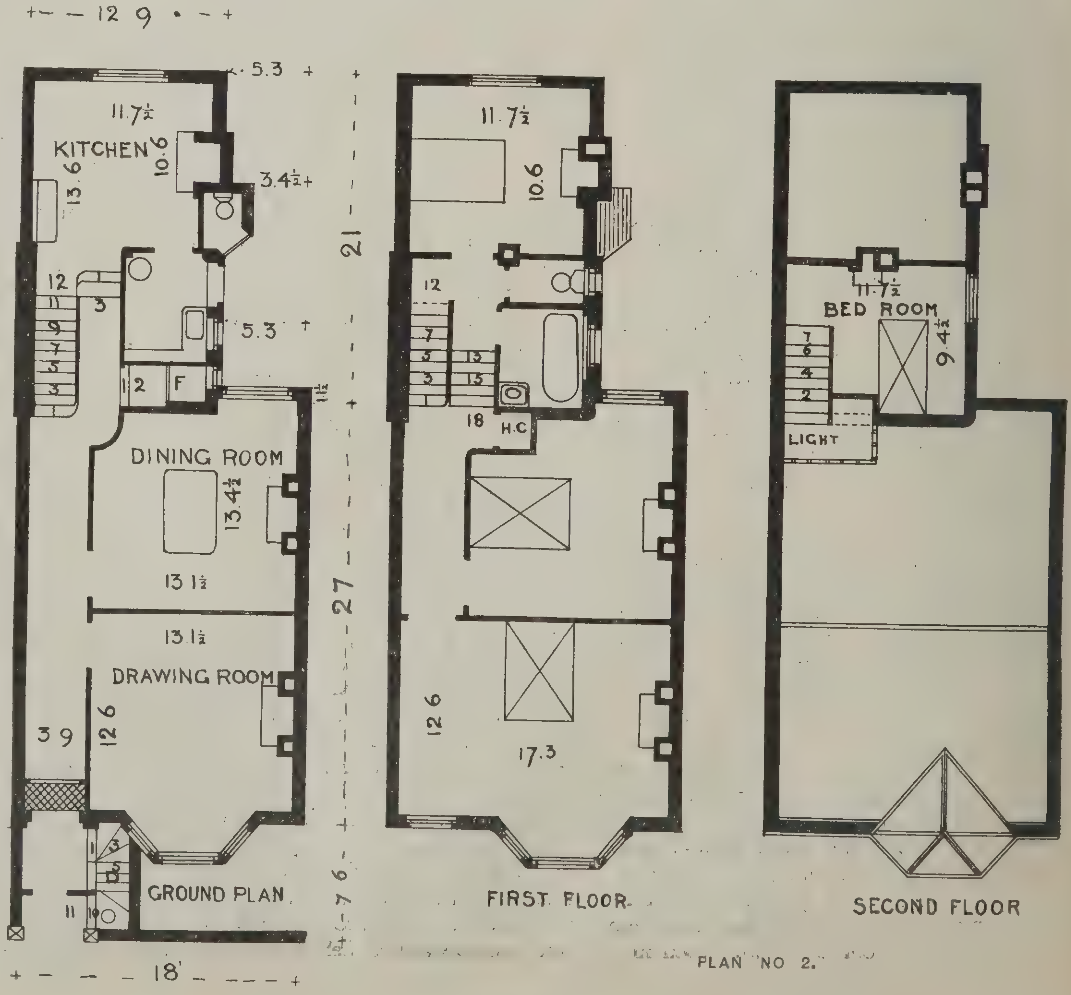
*Plan No. 5* (see p. 90).—This is the smallest practicable house that can be designed in a 21ft. frontage and 30ft. depth, exclusive of scullery portion. It makes a very compact small house, and has every necessary convenience.

*Plan No. 6* (see p. 91.)—This is a larger development of the same (21ft.) frontage. The arrangement comprises a small pantry on the ground floor in addition to the scullery, and a direct light is provided on the first-floor staircase.

All the plans have a cook's pantry easy of access, independent of any larder in the basement, also a hot closet adjoining the bathroom. I also show how the dust can be removed without entering the dwelling, provided there is no back or side entrance. In the scullery of each house a covered servants' bath is provided.

These plans have taken upwards of forty years to perfect, and I have every reason to be satisfied with the results arrived at after innumerable changes and alterations during that long period of experience and constant study and search.

[Discussion of these plans is invited.—Ed. B. J.]



# THE BRITISH ASSOCIATION.

THE British Association have been holding their annual meeting at Southport during the past week.

**The Thrifty Building Societies.**

On Thursday, in his address before the Economic Science and Statistics section, Mr. Edward W. Brabrook said that the 2,000 building societies in Great Britain and Ireland have 600,000 members and 62 millions of funds; they advance as much as £9,000,000 a year on mortgage. Building societies have passed through a crisis. The incorporated societies reached their highest point of prosperity in 1887, when their capital amounted to 54 millions; by 1894 it had fallen to below 43 millions. The Building Societies Act, 1894, required of societies a fuller disclosure of the real state of their affairs than had previously been called for. The result was to show that, apart from the special scandal caused by the fraudulent proceedings of the Liberator Society, there were hitherto undisclosed elements of weakness in the management of building societies that justified the withdrawal of public confidence. At this day it may be said that the societies as a whole have regained the position they held in public confidence, for the members now know the worst. They know, too, that where the blight of properties in possession still infests the business the managers are resolutely endeavouring to diminish its effect.

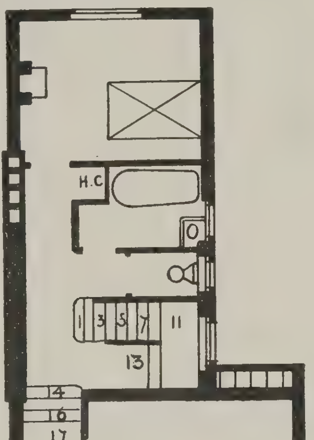
**Mr. Hawksley on Water Supply.**

In the course of his presidential address to the Engineering section of the British Association last Thursday Mr. Charles Hawksley entered into questions of water supply. He observed that in reservoirs there was a loss by evaporation, and in most cases a deduction to compensate riparian owners, with the result that where the rainfall was 40in. a year, the quantity available for supply would be 18in. without compensation and 12in. with it. However pure the water might be at the gathering ground it was improved by filtration, though this at present was not universal. The filter beds in this country were formed of a layer of sand, from 2ft. to 3ft. thick, which, of course, had to be cleaned from time to time. The position of the filter bed was determined by local circumstances; but it was very desirable not to let the water be exposed to light for any considerable distance between it and the commencement of distribution. There should also be a service reservoir to equalize the varying demand on the supply—during certain times quite twice the average amount—otherwise the capacity of the aqueduct would need to be very much increased. When the water was obtained by pumping, it was drawn either from a source only slightly below the level of the pumping engines, in which case filtration was usually necessary, or from deep wells sunk into water-bearing rock. As for the amount consumed, he had found by computation from sixteen towns in England (of which Southport was one) that, excluding what was supplied by meter to large consumers, the average was 18½ gals. per head per day. The address concluded with a short account of the Southport water supply, which is derived from two wells in the Bunter beds. The water is pumped to the summit of Gorse Hill, near Ormskirk, 260ft. above sea-level.

Before the same section a paper on "The Problem of Modern Street Traffic" was read by Lieut.-Col. Crompton, R.E., on Friday. He suggested the formation of a traffic department in every large town, empowered to make rules for the regulation of traffic and for diverting heavy traffic from the main thoroughfares to side streets.

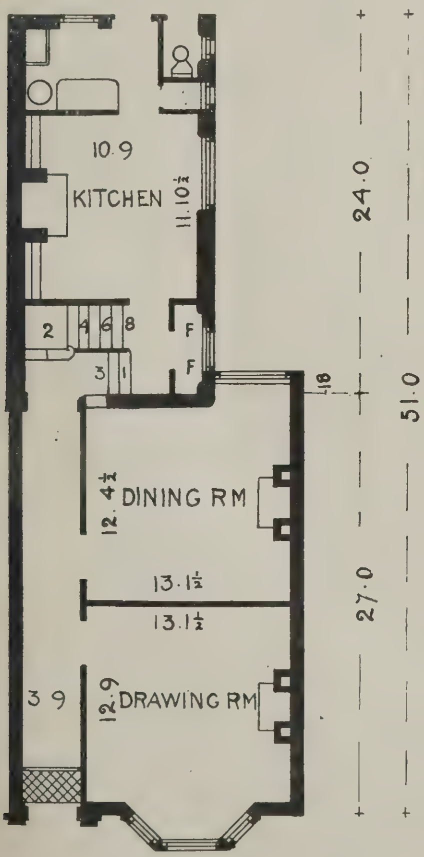
In a paper on the "Rating of Land Values" Mr. J. D. Chorlton said that uncovered land in the neighbourhood of large towns should not be taxed. The experiment of taxing such land had been made in Berlin with no great success, and any form of the taxation of capital was fundamentally opposed to our system. In London the classical illustration might be taken as Holland Park, where the land was actually assessed at £2,900, but on the principle of taxing land unoccupied by building the assessment would be at least £28,000.

Before the Anthropology section papers were read by Mr. T. Ashby on the excavations at Caerwent, by Mr. John Garstang on Ribchester, the Roman fort at Brough, and the discoveries in the hillside of Beni-Hasan, by Mr. J. L. Myres on Silchester, and by Dr. Charles S. Myers on Egyptian antiquities at Kharga. At Caerwent the buildings so far brought to light consist chiefly of private houses, some of them having a ground plan which is unique in England, the rooms being arranged round all the four sides of a rectangular courtyard.

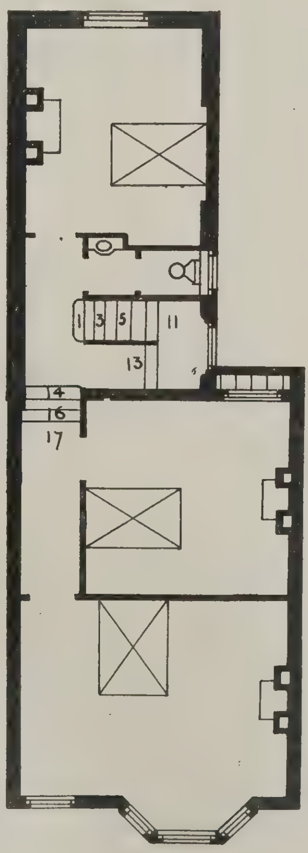


FIRST FLOOR

ALTERNATE PLAN



GROUND PLAN



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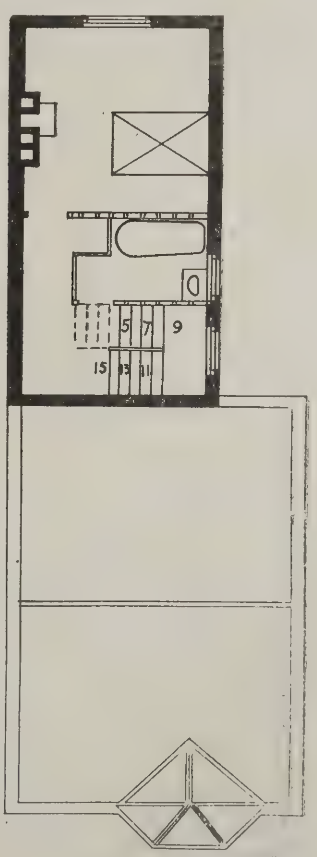

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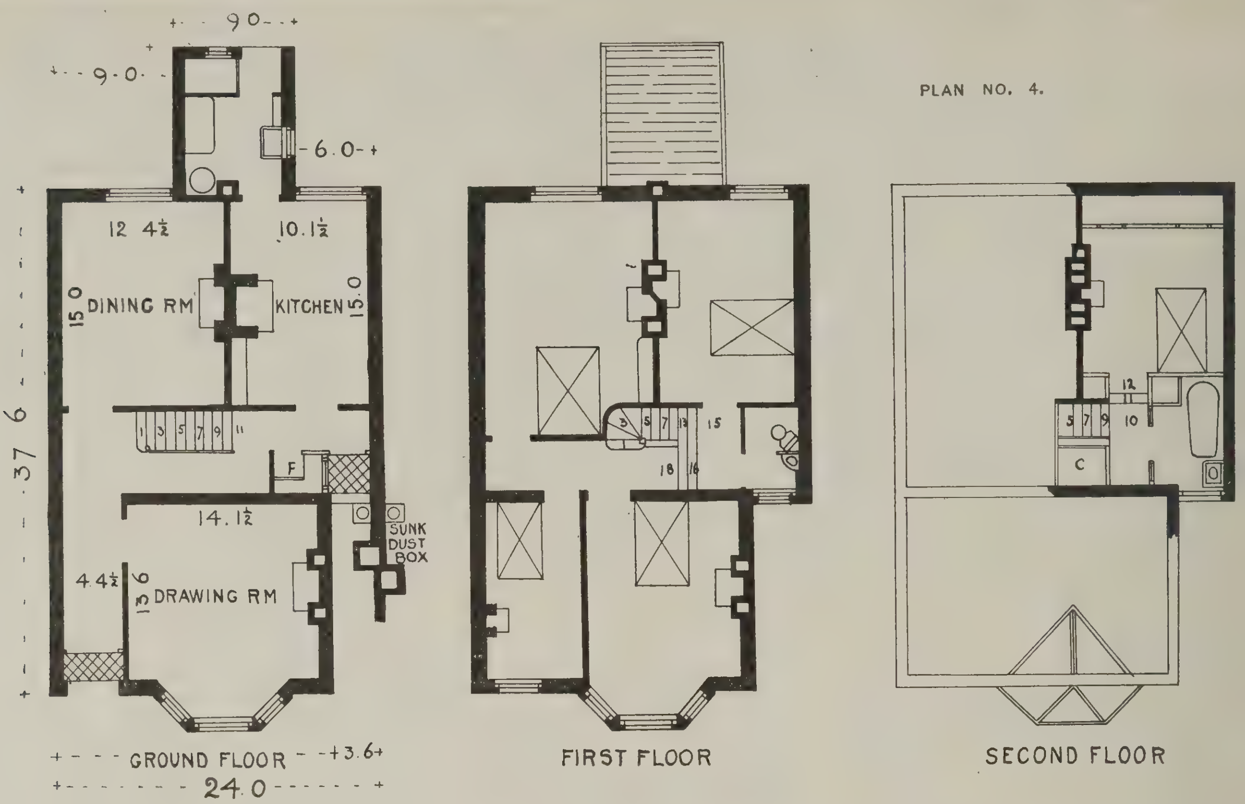
PLAN NO 3.



GROUND FLOOR

FIRST FLOOR

SECOND FLOOR

PLAN NO. 4.

## BUILDING IN CUBA.

THE majority of the houses in Cuba requiring skilled labour are built of brick or of a cement and rubble composition called mamposteria. Stone is used in some of the more pretentious city edifices. Frame buildings are to be found occasionally in the suburbs of the larger towns, especially in the summer resorts near Cienfuegos, Santiago and other coast places. While of modest dimensions, these are frequently well built. The wooden buildings, common in the country and smaller towns, are usually of very crude construction. In a few of the older and less progressive towns adobe or wattle construction is even now being used. Most of the country people of Cuba reside in palm-bark huts, which are made and repaired by the occupant without the employment of hired labour. Consequently the number of men engaged professionally in the building trades is not relatively a large percentage of the population of the island.

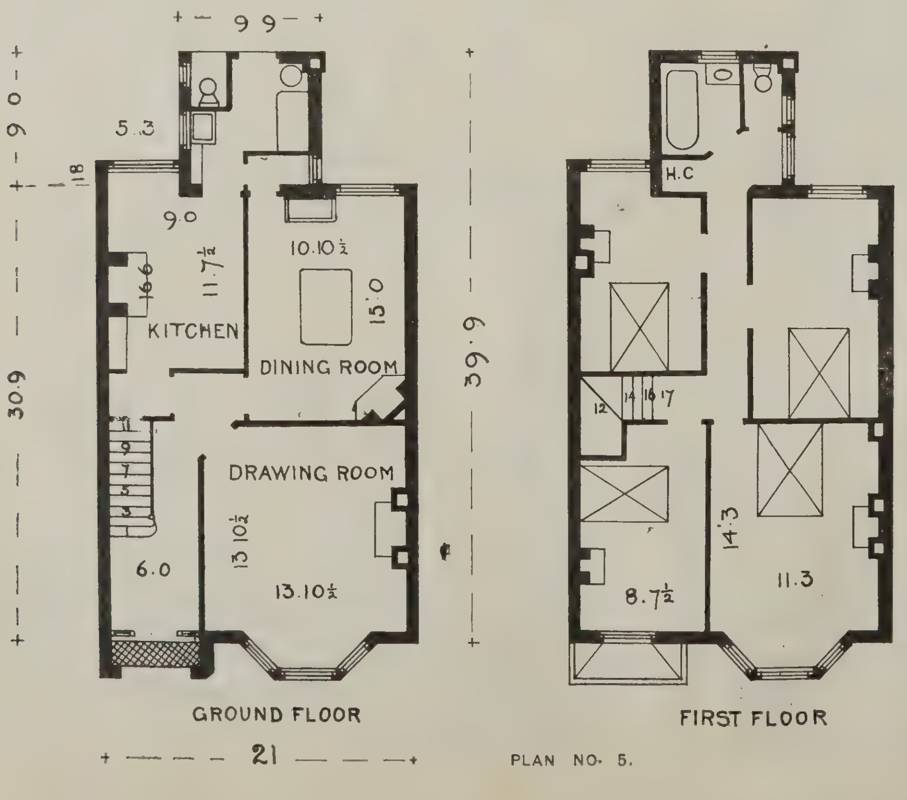
According to the census statistics, there are less than half as many masons as carpenters in Cuba. There are also many men employed on buildings as masons' helpers who do not rank as members of the trade. The best trained workman in a community is often a black man, and frequently when houses are being erected or repairs made in Habana and its vicinity the foreman in charge of the work is a full-blooded negro, while many of the men under him are whites or mulattoes

Construction is not accurate and traditional methods, forms, plans and design are used to such an extent as to make one Cuban building appear very much like another The massiveness of the masonry, while often explained as necessary to withstand tropical storms or earthquakes, is really due to the inferiority of the materials employed, the lack of knowledge of structural economics on the part of builders, and an unevenness in the skill of workmen that makes it necessary to allow a large margin for possible errors in the work.

Skilled bricklayers receive from 2 dols. to 3 dols. a day in Spanish silver (6s. to 8s. 9d.). Apprentices are paid about half that amount. A good man can lay—parallel or in any of the imperfect bonds in common use—300 to 350 bricks a day. These bricks measure 11½in. by 5½in. by 3½in., so that about 40 cub. ft. of wall is considered a normal day's task. Hod carriers and other helpers receive about 3s. a day.

The laying of roof tiles is not considered a separate branch of the trade—unfortunately for the people who live under them—and is usually done by the same men who build the walls. Plastering over lath is not practised in Cuba, and there is little or no hard finishing. Exterior brickwork is always cemented over.

In spite of the prevailing lower price of labour, the cost of construction in Cuba is much greater than in the United States. The reason of this is indicated by an experiment made by the Palatino Brewing Co., of Habana. As this company chanced to be conducting building operations in that city and in the United States at the same time they transferred a gang of American bricklayers to Habana and put them to work by the side of the Cubans already employed, so that the conditions of labour were the same. Upon actual measurement the maximum number of bricks laid by a Cuban workman was 500 a day and by an American 1,000, nine hours constituting a day's labour. This proved the average ratio between the amount of work done by the two gangs. Although the Cuban bricklayers were paid 7s. 3d. and the American received the union rate of 55 cents an hour, or about £1 for a nine-hour day, the cost of laying 1,000 bricks with American labour was but 11s. 6d., while with Cuban labour the cost was 14s. 6d., estimating upon the maximum number of bricks per man.



GROUND FLOOR

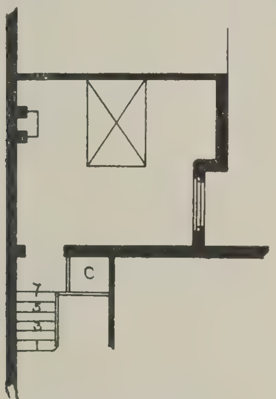
FIRST FLOOR

PLAN NO. 5.

## SOUTHWARK BRIDGE.

### The Proposed Rebuilding.

THE Bridge House Estates Committee was recently instructed to report to the Corporation on the existing facilities for traffic across the Thames. It was suggested that some improvement should be undertaken of the northern approach to Southwark Bridge by the construction of a viaduct starting from a point in Queen Street over Upper Thames Street to the commencement of the bridge; and, further, to enquire as to the practicability of removing the cast-iron semicircular arches of the bridge and replacing them by low-crowned elliptic arches as adopted at Westminster Bridge. The city surveyor (Mr. A. Murray) and Mr. E. W. Cruttwell, the then assisting consulting engineer to the Tower Bridge, were directed to consider the best means of effecting improvements to Southwark Bridge and its approaches, with the result that they suggested the following methods:—(1) By lowering the present bridge and its approaches and raising the levels of Upper Thames Street and Queen Street between Cannon Street and Upper Thames Street; and (2) by lowering the present bridge and constructing a viaduct across Upper Thames Street. It was considered by the Committee that the cost of carrying out the latter plan, together with the necessary spur streets, would be far too heavy to justify its being recommended to the Court of Common Council for adoption. The first-named design contemplates the lowering of the summit of the bridge between 7ft. and 8ft., the improvement in the gradient of Queen Street, the raising of the level of Upper Thames Street between 3ft. and 3ft. 6in. (where the approach to the bridge intersects), and the streets and lanes leading therefrom proportionately. The special sub-committee recommend that that scheme should be adopted and carried out at an estimated cost of £350,000. Vehicular traffic returns have been taken over the four City bridges, and have proved that, owing to the steep gradients, Southwark Bridge is not much used by heavy traffic. The new scheme entails a reconstruction of the bridge, the only portion of the present structure to be utilized being the shore abutments. The width between the parapets is at present 42ft. 6in., and it is proposed to increase it to 60ft. 6in. The scheme will result in an improvement in the gradient of the north side from about 1 in 20 to about 1 in 50, and on the south side from about 1 in 23 to about 1 in 40·5, comparing very favourably with the gradient of Blackfriars Bridge, which is 1 in 40. The actual amount that the bridge may be lowered will depend largely on the views of the Thames Conservancy Board, whose consideration will, no doubt, be influenced by the fact that the headway at Cannon Street railway bridge at high-water is 25ft. 4in., while at Southwark Bridge it is 28ft. 9in. The Committee state that the improvement now suggested, if carried out, will no doubt result in the bridge being used to a much greater extent by the heavy wharf and warehouse traffic, which will not cross while the present gradients remain. Parliament will be asked to consent to the proposal.



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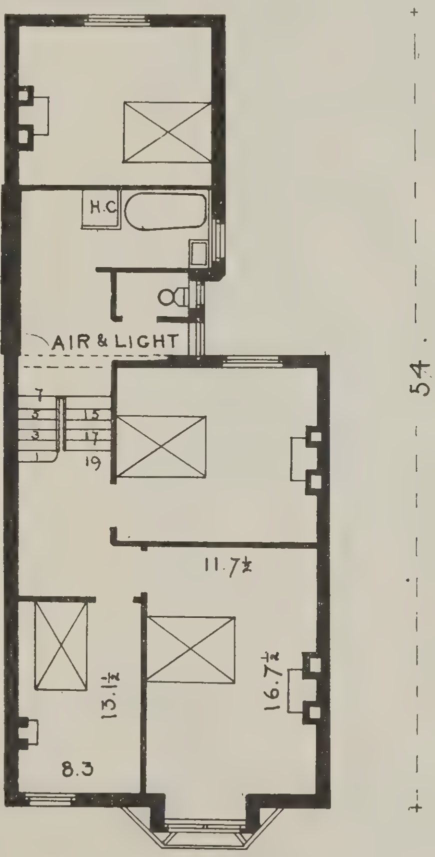

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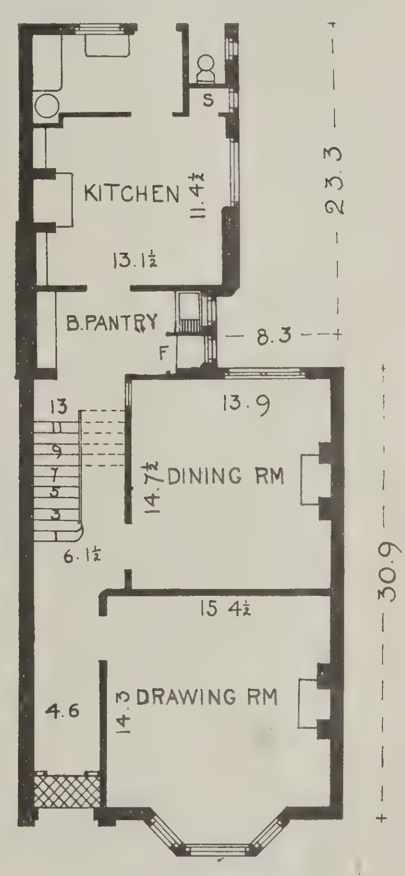


GROUND FLOOR

PLAN NO. 6

## FIRE-RESISTANT WOOD.

### An Expert's Criticism.

MR. A. W. BAXTER, expert to the Non-Flammable Wood and Fabrics Co., Ltd., brings Mr. Moor's statements on the Ferrell process of treating wood under the light of his own experience (Mr. Moor's statements were published in our issue for last week). From investigations he found that sulphate of aluminium, unless used in a concentrated solution of over 30 per cent., gave no proper non-flammability. When used at the large percentage just mentioned (which, by the way, is more than double that used in the standard recognized product) fair non-flammability was obtained, but accompanied with a very serious incrustation that made the working of the treated wood a difficult problem. It will at once be recognized by practical men, says Mr. Baxter, that unless non-flammable wood can be worked—*i.e.*, nailed, sawn, planed, &c.—it is of no use as a material for construction. These are the difficulties which experimenters have to deal with, the obviating of which by the standard recognized process now in practical use has cost in America and this country upwards of £100,000 before they were successfully overcome.

Speaking of painting non-flammable wood, he says:—Whatever be the chemicals for incorporation in solution into the interstices of the wood, care must be taken to see that the aqueous part has all been evaporated before the wood is painted. If the woodworker paints the wood whilst it still contains internal moisture, nothing is more certain than the fact that such internal moisture will work out and peel off the paint. If the wood were impregnated with water, and only water, and painted before such water had entirely evaporated from the interior of the wood, the same result would accrue, the interior moisture would come out and peel off the paint. This was the trouble, and the whole trouble, with the non-flammable wood in the Royal yacht, about which so much has been heard within the past few years. When the treated wood was sent to the shipbuilders by my company they were notified in writing to make sure the wood was thoroughly dry before it was painted and finished, and it was explained to them that if the treated wood contained internal moisture when primed such moisture would work out and peel off the paint or other coating, and possibly set up more or less corrosion of the nails. The shipbuilders were advised to do as the American shipbuilder does, namely, put non-flammable wood for twenty-four hours in a small kiln before being finished to make sure that the interior moisture had all been evaporated. Some of them complied with these requirements, but others failed to do so, and consequently a portion of the wood was painted when it contained internal moisture. Woodworkers, as a rule, are not enthusiastic about the non-flammability of wood, and do not welcome the little extra trouble required in order to properly work it. The Admiralty, in 1899, finding a portion of the paint on the non-flammable wood in the Royal yacht in an unsatisfactory condition, made complaints to my company, with the result that we dried out the internal moisture, and the Admiralty workmen then painted the wood. This was two and a half years ago, and no complaint whatever has since been made by the Admiralty regarding the wood in the yacht.

# SWELLING AND SHRINKAGE OF WOOD.

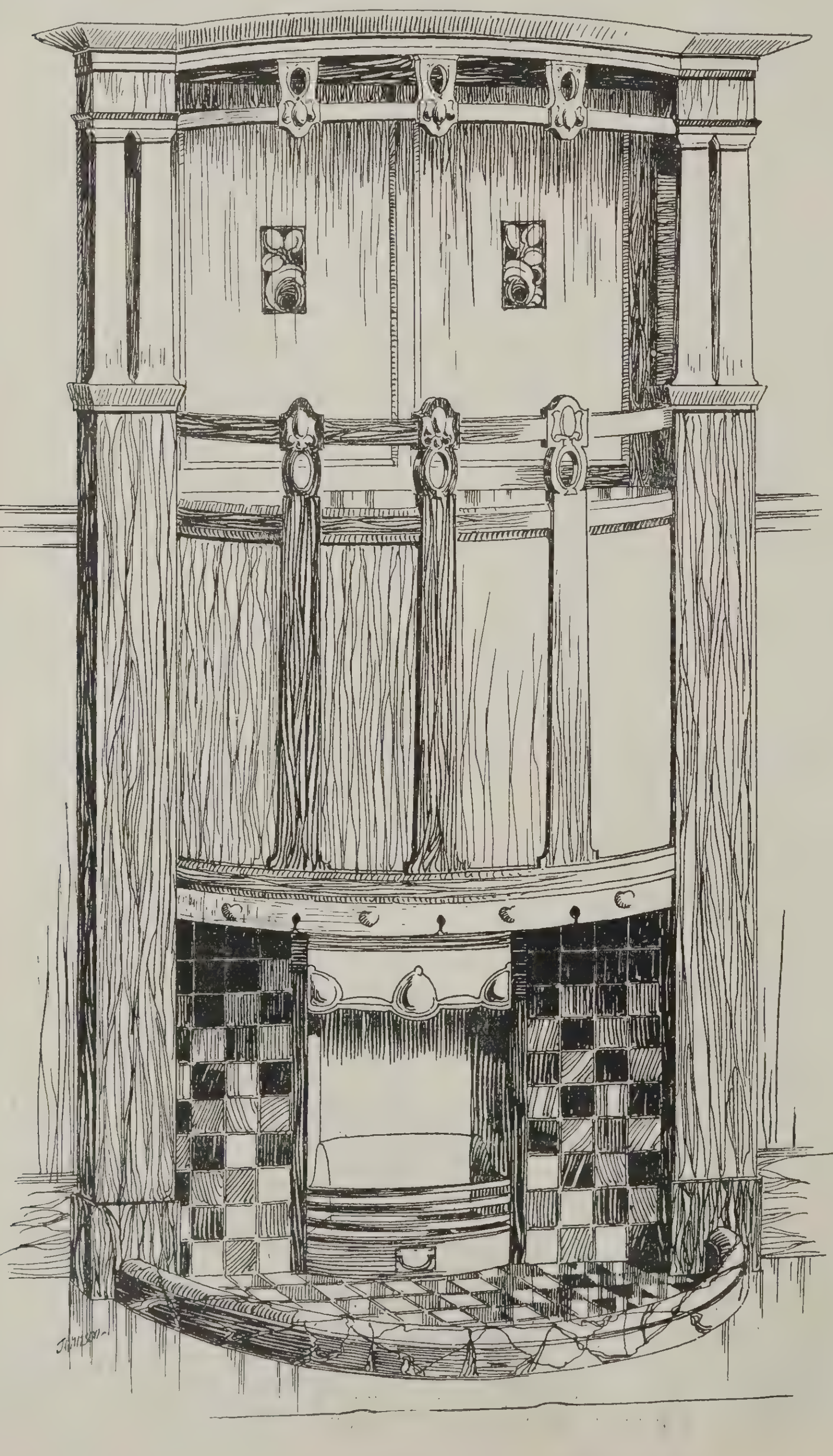
THROUGH one of our foreign exchanges we get some particulars of the swelling and shrinkage of wood in India. No one can pass a monsoon in that country without being reminded, by the sticking of doors, windows and drawers in their frames, of the property which wood has of swelling in moist air. It takes several weeks of continuous wet weather to produce the maximum of expansion in interior woodwork, but outside, where the wood, painted or unpainted, is exposed directly to the rain, the swelling is very rapid. The swelling of doors, windows and other woodwork is often so great as to require the attention of the carpenter, who, as a rule, performs his task in the roughest manner with the mallet and chisel, because he does not possess a suitable plane (this is of course in India). It is not the whole width of the door that swells, else an application of the saw would be necessary to take off enough. The swelling is confined to the stiles and the frames. The rails do not alter appreciably in length, so the movement is due to about 18in. width of timber swelling across the grain.

Hurst's revised edition of Tredgold's "Carpentry" contains tables of the shrinkage and loss of weight of timber during the process of seasoning from ten to thirteen years. The shrinkage in the width of boards 12in. wide and $\frac{1}{2}$in. thick was as follows:—English oak, $\frac{1}{12}$th of the width; African oak, $\frac{1}{27}$th; Riga fir, $\frac{1}{32}$; Dantzig fir, $\frac{1}{38}$; and Virginian pine, $\frac{1}{27}$.

The loss of weight during seasoning of various woods was found to be:—English oak, 21 per cent; English elm, 42 per cent.; Cowrie, 8·3 per cent.; pitch-pine, 2·5.

But this is no guide to the shrinkage or swelling of wood during heavy rains or of teak during the monsoon in India.

Newly-felled wood consists of woody fibre, of hardened gum holding the fibre together, and of sap consisting largely of water. The loss of weight while seasoning shows how much water is lost by evaporation, but no wood ever parts with all its water unless dried in a stove at or above 212 degs. Fahr. It generally contains from 15 to 20 per cent., according to the state of the weather, and every change in the quantity of moisture it contains affects its dimensions as well as its weight. Wood continues to shrink appreciably for many years, the shrinkage becoming less and less as time passes, and its tendency to absorb water appears to diminish at the same time. Old table tops that have been re-jointed no longer open at the joint during dry weather, and old floors that have been relaid cease to crack for the same reason. The woodwork of houses fitted during the rains shows considerable skrinkage when the air becomes dry, but it does not suffer from excessive swelling like that which was built in dry weather. Thoroughly seasoned wood is difficult to get in India, as the consumer is generally unwilling to pay the increased price to cover interest on stock; so house fittings shrink and swell to a maximum degree. Accurate information is much needed on this subject. It is known that wood containing sap is liable to mildew in wet weather, but the influence of sap or the tendency to swell does not seem to have been tabulated. English oak, ash and pitch-pine shrink so much in India as to be unfit for many purposes. The shrinkage is doubtless due to a process of oxidation of the gum. It is probable that differences in shrinkage among Indian woods will be found quite equal to those already given. Bamboo is remarkable for its alteration in diameter when wet and when dry. This is the chief reason for the difficulty that arises when attempts are made to attach metal fittings to it. A series of careful observations on the influence of moisture on cut timber of various ages and in various conditions would form a valuable addition to the knowledge of the engineer, the architect and the woodworker in India. It is just such work which should be undertaken by the students in one of the engineering or technical colleges under the direction of the master.



DESIGN FOR AN INLAID FIREPLACE. BY THOMAS JOHNSON.

# Correspondence.

### Income Tax Overcharges.

*To the Editor of* THE BUILDERS' JOURNAL.

POULTRY, E.C.

SIR,—That hardy annual the blue notice of charge having begun to make its appearance, will you permit us to remind your readers that if they are dissatisfied with their assessments they can appeal against the same to the Commissioners for special purposes at Somerset House. The principal occupation of these gentlemen is the hearing of appeals, and not only do they understand income tax as no local commissioners do but they can be relied upon to treat appellants with courtesy, and to see that they get fair play. The public are continually suffering gross injustice at the hands of different bodies of local commissioners, very few of whom have any knowledge of the matters upon which they have been appointed to adjudicate. October 5th next is the last day for giving notice to set off a loss in business against income from any other source.—Yours truly,

THE INCOME-TAX ADJUSTMENT
AGENCY, LTD.

**Designs for Fireplaces.**—The two designs for inlaid fireplaces by Mr. Thomas Johnson here reproduced were exhibited at this year's Royal Academy.

## BUILDING LAND.

### Customs of Different Countries.

THERE are several causes which may lead to the gradual conversion of vacant land into areas now eminently suitable for building purposes, and capable, therefore, of producing a far larger income than has hitherto been derived from them.

Prominent among these causes is the steady expansion of towns, due in part to the natural increase in the number of their inhabitants, and in part to the persistency with which the rural populations are leaving their native villages in order to seek the higher wages obtainable in some great industrial centre.

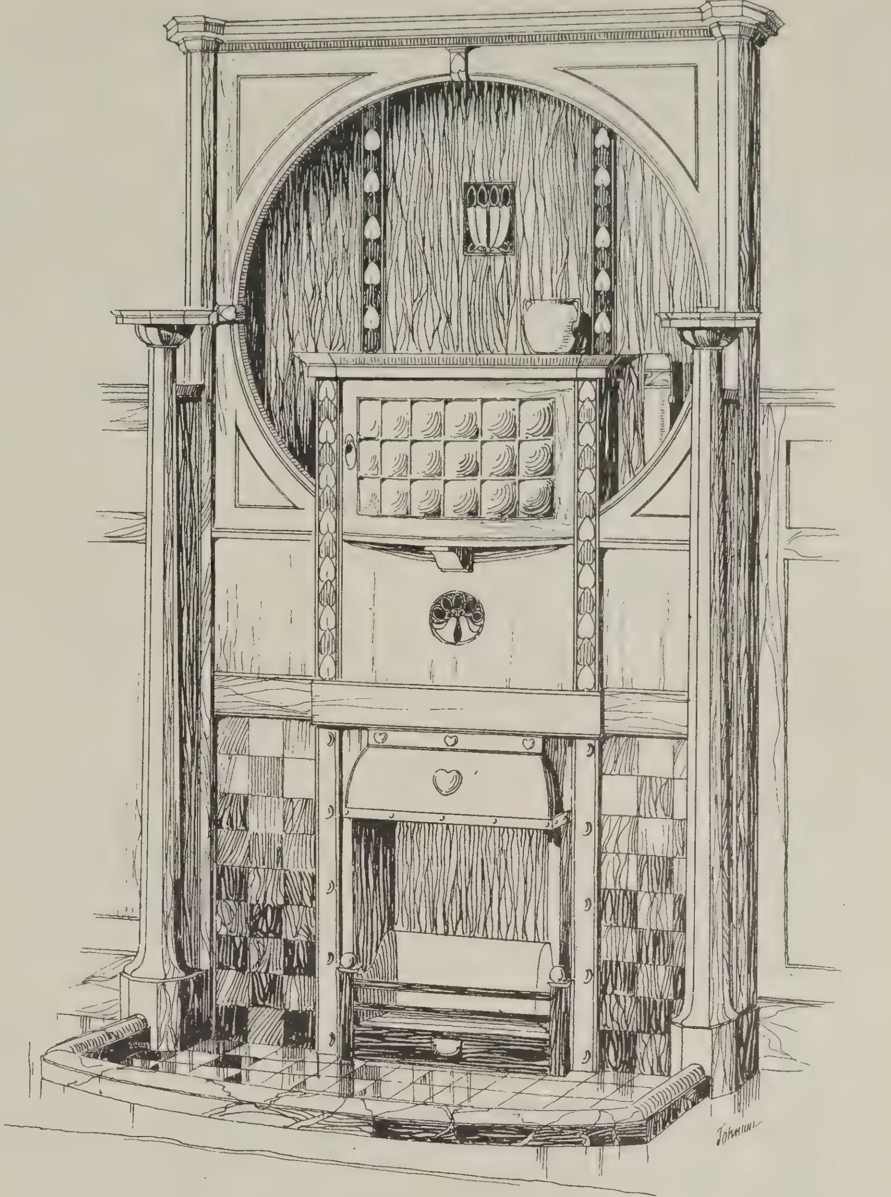
When after the lapse of, say, twenty years one revisits a small village with which he may formerly have been familiar, and whose inhabitants have since continued to be engaged in agricultural pursuits, he finds very little alteration, especially if no railway station has since been opened in the immediate vicinity. The farm lands remain very much as they were. Occasionally a new farmhouse may have replaced an old one, and sundry additional labourers' cottages may have been built here and there; but the general aspect of the place remains the same, and a large proportion of the inhabitants still continue in the cottages they formerly occupied; for the grown-up peasant of an English village is not of a migratory disposition, and it is from amongst his children that the exodus occurs. But a comparison of any manufacturing town of the present day with the same town of twenty years ago shows an enormous difference. New railway stations, new tramways and new public buildings afford evidence of a growing population and increasing prosperity, and in order to meet the requirements of this growing population new streets of houses have been constructed in every outskirt of the town, covering what had previously been open fields or market-garden ground.

The houses thus constructed do not resemble those gorgeous palaces whose erection the Roman poet feared might leave few acres for the plough, but consist almost entirely of suburban villas with some fraction of an acre of garden ground, or of long rows of premises suitable for artizans. Sometimes the freehold of the land thus newly occupied may have been sold, but in the majority of cases it will have been let on building lease, and a corresponding ground rent will have been created.

The custom of letting land on building lease—in other words, of letting it so that someone other than the owner shall erect houses and shops upon it, and that the owner or his successors, after receiving the ground rent for a long term of years, shall retake possession of the land with the buildings standing thereon—is practically unknown in any other civilised country; but it is one so long and firmly-established here that it seems difficult to effect any radical change.

In France, in Germany, in Switzerland, in the United States, and, in fact, everywhere except in Britain, if a builder desires to erect a house from a business point of view, or if a private individual wishes to build one for his own occupation, the first step he takes is to secure the freehold of the site he proposes to utilize, and if that particular site is not for sale at such a price as he is prepared to pay, then he purchases another elsewhere; so that in practically every case such houses are erected on what has become the freehold land of their builder.

The notice-boards which are scattered as numerously along the outskirts of Continental cities as in the suburbs of English towns bear the inscription, "This land to be sold," and never, "This land to be let on building lease." If any land agent on the Continent were to search for a builder willing to erect a costly edifice on someone else's land, with the understanding that such builder should pay a full rent for the use of the land, and that after the lapse of a certain number of years the edifice he had erected, together with the land on which it stood, should fall into the possession of the original owner of the land or his heirs, that land agent would assuredly find he might as well search for the philosopher's stone.



DESIGN FOR AN INLAID FIREPLACE. BY THOMAS JOHNSON.

This truly extraordinary English custom is a relic of those feudal times when the owner of the land was indeed its lord, and the landlord of those days was of a race apart from his tenants, over whom he was enabled to exert despotic sway. But nowadays anyone with £100 at his banker's may become a landlord, and will have little difficulty in letting the plot of ground whence he derives his sonorous title to some builder at a ground rent which will yield him 3 or 4 per cent. on his outlay, and the terms of the lease will enable his heirs at some future time to retake possession of the land, together with the house standing thereon.

Occasionally, residential districts may be found in England wherein houses have been erected by the landowners themselves, as was done by Astor, who personally effected those great building operations which made him the so-called landlord of New York. But by far the greater proportion of English building land is covered by men who do not own it—by men who simply take it for a term of years, and lose all interest in it at the end of that term.

The system which obtains in America is very much the same as that met with on the Continent; but there is also in the States a variation from the customs of England or the Continent of a very interesting and important character, directly affecting the relationship of the landlord and tenant of building land. The usual practice is for land to be bought and sold as freehold land for the houses erected upon it to be the absolute property of the builder. But it does occasionally happen, especially in the older States, such as Maryland or Virginia, whose names are evidence of their early colonization, and where old customs have to some extent survived, that a piece of ground is actually let by the freeholder on building lease, and the lessee, as in England, does erect houses on land which is not his own, and he pays a ground rent for the use of that land. Here, however, the resemblance between the two customs ceases, for when the American lease expires the lessee is not served with some lengthy specification requiring him to go over the house from roof to basement and hand it over to the landlord in a sound and habitable condition, or else to pay a sum of money equivalent to the costs of these operations.

On the contrary, when the American lease expires the lessee can serve a notice upon his landlord requiring him to pay the present value of the house and buildings which have been put up upon this land. If these premises are in a dilapidated state, then the lessor has to pay little or nothing; but if, on the other hand, they are substantial premises, then the representatives of the lessee who originally erected them, and by whom they have been maintained, receive back their value from the representatives of the original lessor. That is, when land which has been let on building lease reverts to its original owner or his heirs, then the lessee or his representative is recouped for the outlay which they have made upon the land.

Such a system appears to the Americans, by whom it is adopted, to deal justly with both parties to the original letting. The lessor receives a ground rent for the use of his land; but as he did not make any outlay in erecting a house, he is not entitled to receive one free gratis at the end of the lease; the lessee, on the other hand, has expended money in putting up buildings on someone else's land for the mutual convenience of both parties, and when that lease expires, and the ground reverts to its owner, it is reasonable that the owner should be required to pay the lessee for the buildings he now finds upon his land.

An arrangement not unfrequently adopted in the States on the termination of such leases is that a fresh lease should be granted, based upon the present value of the land, but entirely irrespective of the value of the houses for they are the property of the lessee. I terms can thus be arranged no present payment for the premises takes place; but thi question is only deferred, and when the leas is finally determined, and the land surrendered the lessee is entitled to the value of th buildings.

Questions affecting land are likely t acquire increasing importance in England It is certain that no new scheme would b tolerated which would deprive an owner o his proper rights; but it is a matter for consideration, now that enquiries are in the air whether our present system of letting land o building lease is so perfect that the America system before described is unworthy of ou attention.—(From The "Statist.")

## MODERN LONDON BUILDINGS.

(*Continued from* p. 64, *No.* 447.)

*The following lists have already been published:—E.C. district: Public and semi-public buildings, March 25th; domestic and religiou buildings, colleges and schools, April 1st; business premises, April 15th, April 29th and May 13th; hotels, restaurants, &c., May 13th E. district: Public and semi-public buildings, June 3rd and August 5th; religious buildings, colleges and schools, July 8th; business premise domestic buildings, hotels, restaurants and public-houses, August 5th. S.E. district: Public and semi-public buildings, August 5th and 19th religious buildings, August 19th; business premises and domestic buildings. September 2nd.*

### S. E. DISTRICT: COLLEGES AND SCHOOLS.

| BUILDING. | ARCHITECT. | APPROXIMATE COST. | REMARKS. |
|---|---|---|---|
| **1875.** | | £ | |
| Aske's Schools, New Cross. | W. Snooke | — | Accommodation is provided for 300 boys and 300 girls. The two schools are uniform, and are Gothic in desig They are 78ft. long. and 50ft. high, and are built of stock and Suffolk brickwork, with Box Ground stone for sills an dressings |
| Board Schools, Albany Road, Camberwell. | E. R Robson | 6,394 | The style is Queen Anne. The schools accommodate 785 children. The cost, including site, was £9 10s. 6d. per hea |
| Board Schools, Deptford. | E. R Robson | 5,589 | In the Queen Anne style, of brick and Portland stone. The schools accommodate 785 children. |
| Board Schools, Upper Earl Street, Plumstead. | E. R. Robson | 6,693 | The schools are for 810 children. The inclusive cost per head was £9 1[illegible]s. 4d. |
| Walworth Common Schools | Jarvis & Son | 9,300 | The area of the site is three quarters of an acre. The schools, which are of brick with Bath stone facings, accomm date 1,060 children. |
| **1876.** | | | |
| Board Schools, Lower Park Road, Peckham. | E. R. Robson | 9,800 | The total inclusive cost per head for 548 children was £16 2s. 6d. |
| Board Schools, Manor Road, Bermondsey. | E. R Robson | 8,862 | These schools were built for 800 children, at a total cost of £12 11s. per head. They are carried out in red brick. |
| Board Schools, Neckinger Road, Bermondsey. | E. R. Robson | 8,378 | The style is Queen Anne, and the accommodation is for 872 children. |
| Board Schools, Sydenham Hill. | E. R. Robson | 5,703 | The schools, which are situated at the back of the lecture hall, are for 582 children. |
| Royal Naval School Extension, Greenwich. | Director of Works for the Admiralty | — | The extension comprises a new wing 187ft. by 37ft. for 200 extra boys, a new racquet court 74ft. by 32ft. 6i gymnasium. laundry and a kitchen 41ft. square |
| Roan's Charity Schools, East Street, Greenwich | Robert Walker | 4,714 | The schools will hold 300 boys. They are Gothic in style, carried out in red brick and Portland stone, with facin of picked stocks. There is a hall 47ft. by 30ft. |
| St. Austen's College and Chapel, New Kent Road. | Norton | — | The buildings are of stone in the Gothic style. |
| **1877.** | | | |
| Board School, Leipsic Road, Camberwell. | E. R. Robson | 11,281 | Accommodation is provided for 747 children. |
| **1878.** | | | |
| Board Schools, Beresford Street, Walworth. | E. R. Robson | 13,588 (including site). | The schools accommodate 697 children. The cost was £19 9s. 11d. per head. |
| Roman Catholic Ladies' College, Knatchbull Road, Camberwell. | C. A. Buckler | — | The college is 74ft. in length by 72ft. in height to the cornice. It is of stock brickwork, with white Suffolk brick a Portland stone dressings. There is a chapel attached, 16ft. by 22ft, with chancel. |
| **1879.** | | | |
| Board School, Janner's Hill Deptford. | E R. Robson | 7,900 | Accommodation is for 498 children. |
| **1880.** | | | |
| High School for Girls, Blackheath. | E. R. Robson | 5,500 | There is a central hall 61ft. by 31ft., around which are eight classrooms, each about 20ft. square. The grand stairca is of terra-cotta, the general walling being of stock brickwork, with a large stone portal. The school is for 3 girls. |
| Mary Datchelor Schools, Camberwell Grove, Camberwell. | Chatfeild Clarke | — | The school will accommodate 600 girls. The elevation is of red brick, with Portland stone dressings. It is 98 long by 55ft. high, while some portions of the building have a depth of 100ft. In the basement is a dining-roo 86ft. by 45ft. |
| **1881.** | | | |
| Board School, Lyndhurst Grove, Peckham. | E. R. Robson | 9,992 | The accommodation is for 1,110 children. The cost was £6 18s. 4d. per head. |
| Board School, Woods Road, Peckham. | E. R. Robson | — | For 1,400 children, the cost being £8 16s 6d. per child. |
| **1882.** | | | |
| Baptist Sunday Schools, Wells Street, Camberwell. | Edward Sears | 1,600 | The buildings are Gothic in style. They are red brick faced with freestone dressings. |
| Board Schools, Credon Road, Peckham. | E. R. Robson | — | The schools accommodate 1,610 children. |
| Board Schools, Mina Road, Old Kent Road. | E. R. Robson | [illegible] | The site comprises half an acre. Accommodation is for 1,398 children. |
| **1883.** | | | |
| Board Schools, Heber Road, East Dulwich. | E. R. Robson | 11,174 | The schools accommodate 1,038 children. The total cost was £13 2s. 8d. per head. |
| Parochial Schools, Norwood | Coe & Robinson | 47,000 | The style is Italian, carried out in stock brickwork, with red brick and Portland stone dressings. The dining-hall 90ft. by 42ft., and underneath it is a plunge bath. The buildings are planned on the pavilion principle. There a chapel, designed in the Early English style, that accommodates 600 children. |
| Sunday School, Clifton Congregational Church, Asylums Road, Peckham. | J. Wallis Chapman | 1,380 | The main room is 55ft. by 32ft., in addition to which are classrooms. The exterior is in red brick and Bath stone. |
| Sunday Schools, Lewisham Congregational Church. | George Sherrin | 6,000 | The exterior is of Kentish Rag stone, with Bath stone dressings. The buildings comprise a lecture hall, classrooms, & They are Decorated Gothic in style. |

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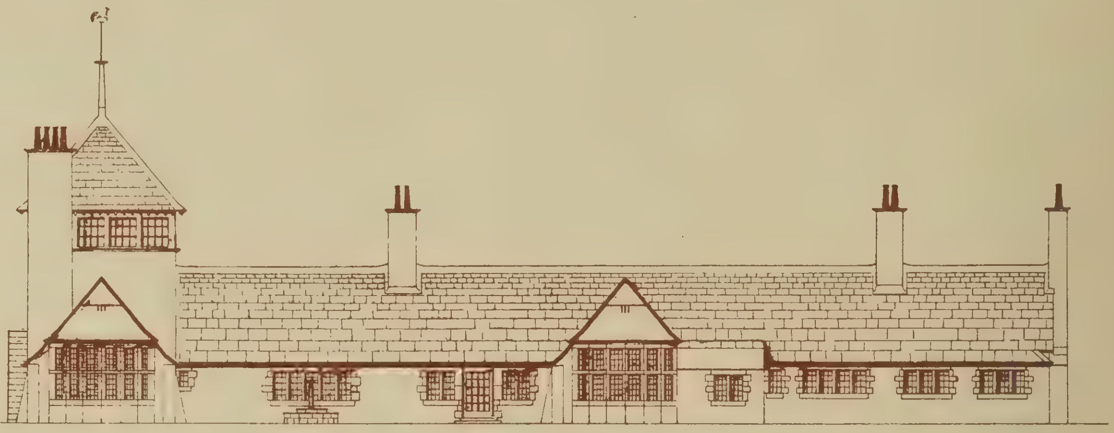
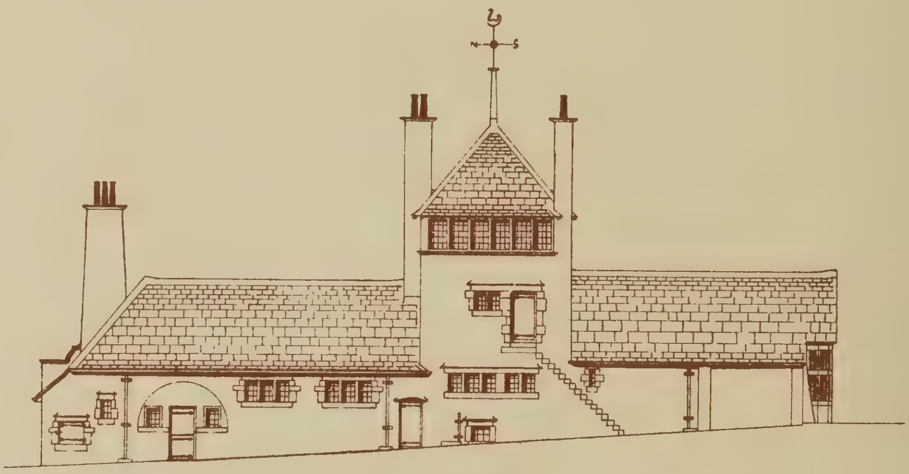


SOUTH·ELEVATION·



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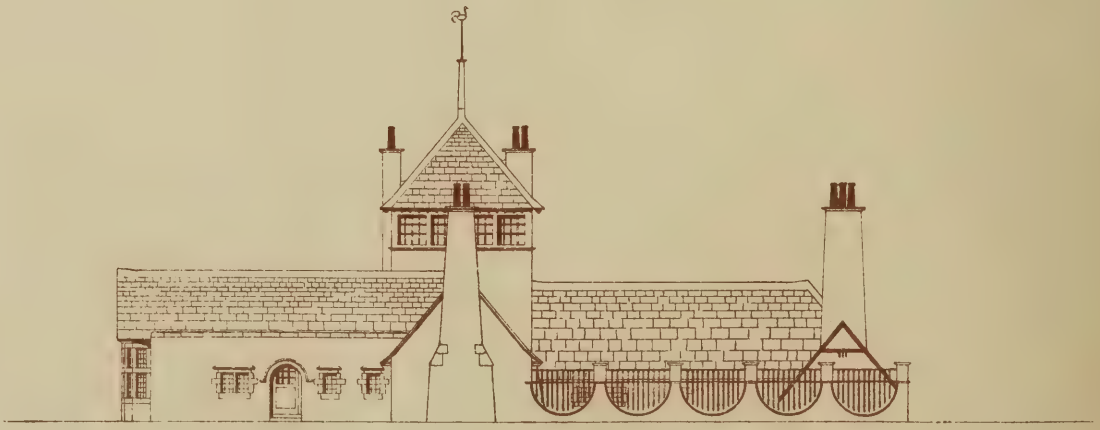
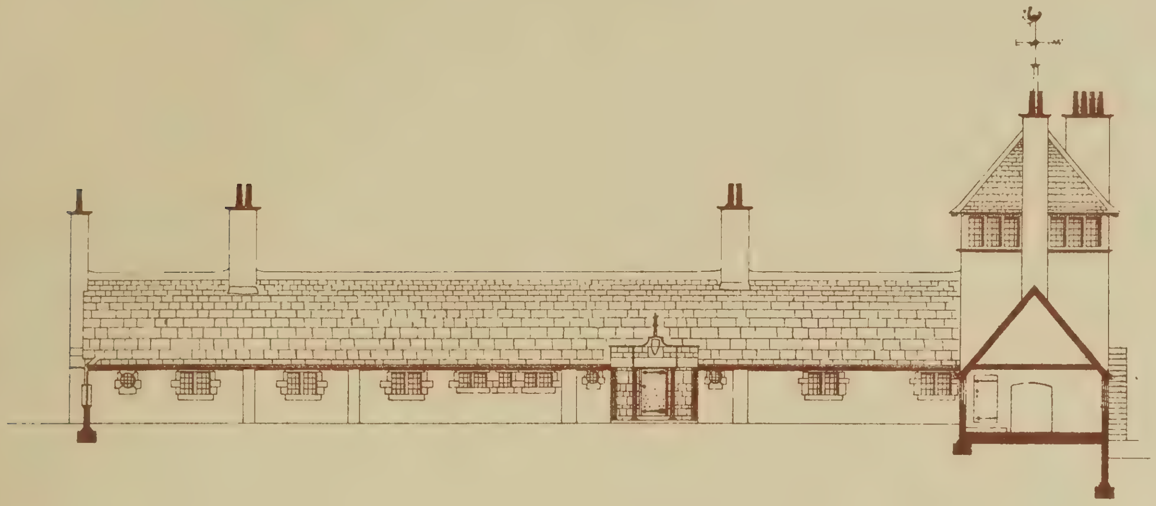
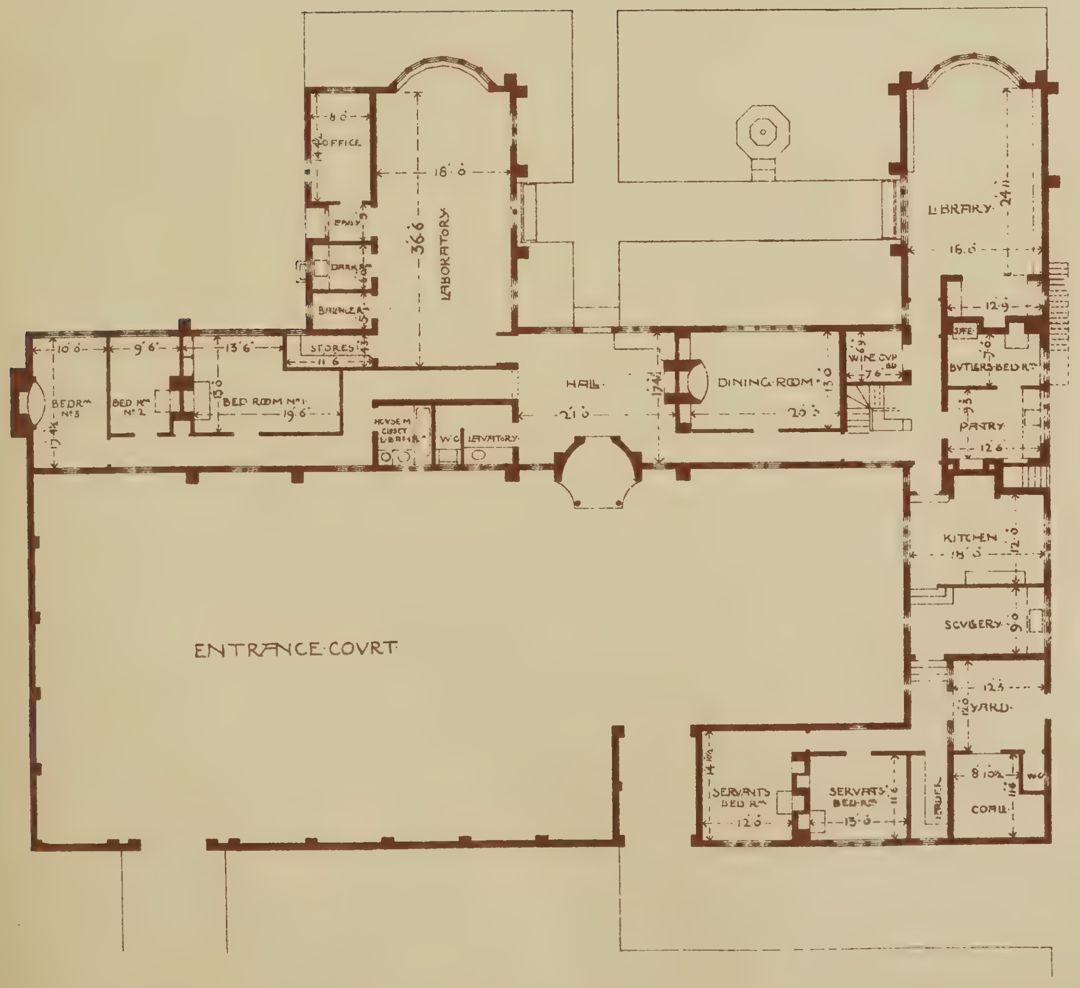


EAST·ELEVATION·

DESIGN FOR A HOUSE AT BLACKHEA





NDON, S.E. C. F. A. VOYSEY, ARCHITECT.

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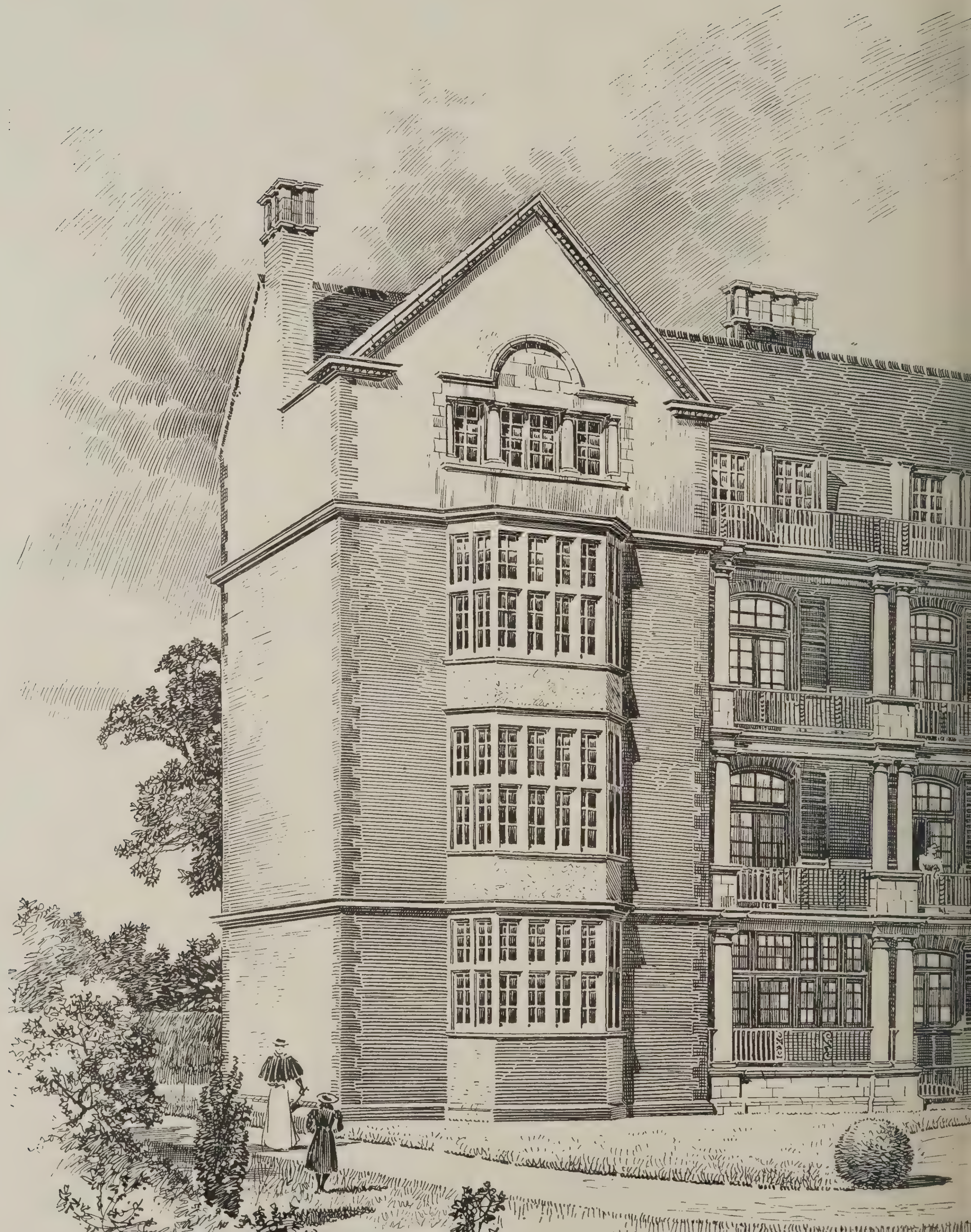

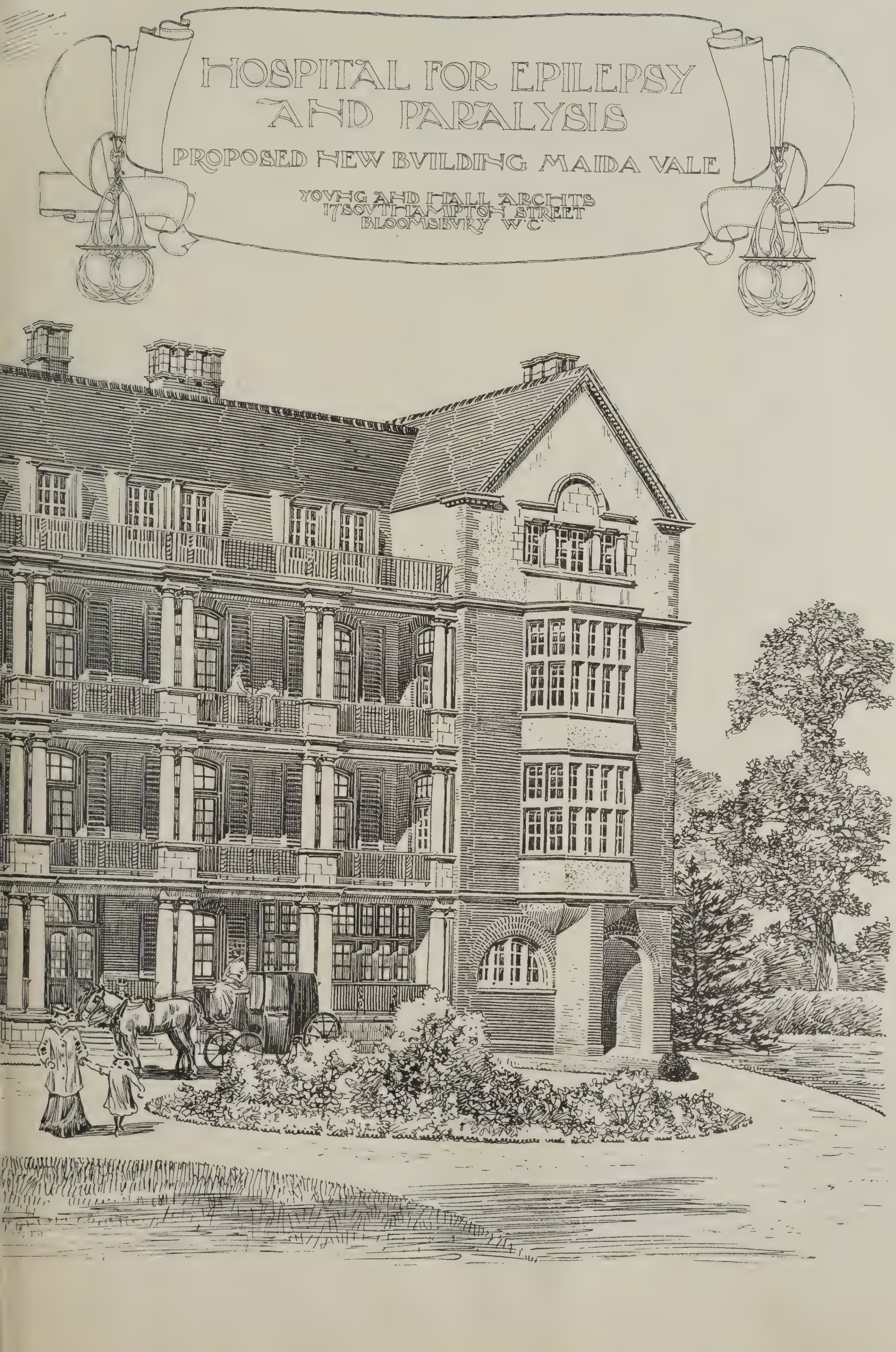

HOSPITAL FOR EPILEPSY AND PARALYSIS

PROPOSED NEW BUILDING MAIDA VALE

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## S.E. DISTRICT: COLLEGES AND SCHOOLS—*cont.*

| BUILDING. | ARCHITECT. | APPROXIMATE COST. | REMARKS. |
|---|---|---|---|
| **1884.** | | £ | |
| Franciscan College and Monastery, Peckham Park Road | Burns | 4,000 | The college has a 70ft. frontage. The buildings are 80ft. high and comprise four floors above ground level. Malm bricks with Corsham Down stone were used. There are a refectory 20ft. square, a library and students' rooms on the ground floor. The upper floors contain dormitories. |
| **1885.** | | | |
| "International College," Finchley Road. | Banister Fletcher | — | The building is in the Gothic style, freely treated It affords accommodation to 100 day scholars and 100 boarders. The materials used were red bricks and white stone. There is a hall to seat 800 persons on the ground floor. |
| Aske's School for Girls, New Cross Road, Hatcham. | Henry Stock | 23 500 | The schools are for 400 pupils. On the ground floor is a dining-hall, below which are the examination hall, kitchen, gymnasium, &c. The first floor contains classrooms, studio, laboratory, lecture-room, &c. The facings are of red brick, the dressings being of Bath stone. |
| Board Schools, Woodland Road, Upper Norwood. | T. J. Bailey | 9,879 | Accommodation for 807 children. |
| R.C. Schools, Southwark. | Leonard Stokes | £6 3s. 8d. per head | These schools are attached to St. George's Pro-Cathedral, Westminster Bridge Road The exterior is faced with stock brickwork, with red brick bands. The building measures 95ft. by 27ft. The interior is lined with glazed brickwork. The schools accommodate 256 boys, 303 girls and 256 infants. |
| Working Lads' Institute, Bridge Street, Greenwich. | George Baines | 2,000 | A reading and refreshment room is entered from the vestibule, and the ground floor comprises kitchens, gymnasium and infants' room. There is a teachers' room on the mezzanine floor, with classrooms on the first floor and dormitories above. |
| **1888.** | | | |
| Board Schools, Goodrich Road, East Dulwich. | T. J. Bailey | 17,410 | Each floor has a hall and nine classrooms, accommodating 1,600 scholars. |
| Colfe's Grammar School, Lewisham Hill. | Mitchell & Butler | — | The walling is of dark red brickwork, with light tiled roofs. Stone is used for mullions and dressings only. |
| **1889.** | | | |
| Board Schools, Rathfern Road, Catford. | T. J. Bailey | 9,133 | The accommodation is for 800 children. |
| Wesleyan Schools, Kitto Road, Peckham. | E. Hoole | — | There is a central school hall to hold 700, surrounded by classrooms. The walls are faced with picked stocks and banded with red brick and Bath stone dressings. |
| **1890.** | | | |
| Lewisham Grammar School for Girls, Corner of Hawstead Road and Rushey Green. | Albert L. Guy | — | Accommodation is provided for 300 day scholars. The school is built on the central hall system, the classrooms entering into the hall, which is 60ft. by 30ft. by 27ft. high, with a gallery at first-floor level to hold eighty persons. Externally the building is of red brick with stone dressings, and roofed with green slates. |
| **1891.** | | | |
| The Goldsmiths' Technical and Recreative Institute, New Cross | J. Wornham Penfold. | — | The institute buildings are those of the Royal Naval school adapted. The ground floor of the main building contains offices and bookstall; on the first floor are library, reading and news-rooms, &c. |
| **1893.** | | | |
| St. Olave's Grammar School, Southwark. | E. W Mountford | 26,000 | The external walls are faced with red bricks, the plinth and dressings being of Portland stone, and the roofs are covered with Westmoreland slates. There are a central hall 80ft. by 40ft. and twelve large classrooms, besides a lecture-room and three laboratories, which occupy the whole of the second floor. Masters' rooms and a large library are also provided. The dining-room on the first floor is 40ft. by 27ft., with kitchen and domestic offices over. In a detached building are workshops and a gymnasium. |
| Wilson's Grammar School, Camberwell. | E. R. Robson | 4,500 | The elevations are of red brickwork, with stone sparingly introduced. The building is set back from the road, with a playground in front. Accommodation is for 250 boys. The style is suggestive of the time of Edward VI. |
| **1896.** | | | |
| Board Schools, Fossdene Road, Charlton. | T. J. Bailey | — | The building has three floors of six rooms each, and accommodates 1,180 scholars. It is of brick and cement, and the fittings are of polished pine. In addition to the usual accommodation, there are laundry and cookery centres and a special art room. |
| **1898.** | | | |
| Borough Polytechnic additions. | - - - - | — | The additional buildings consist of a gymnasium 80ft. by 40ft., four workshops for wheelwrights, bootmakers, printers and bookbinders respectively, a school of cookery, physical laboratory and lecture theatre, a men's club, and refreshment-rooms, &c. |
| Deptford Fund House, Creek Road, Deptford. | Charles Mitcham | — | The buildings consist of two large blocks, one facing the old road, consisting of two storeys above the ground floor, giving accommodation for the charitable and philanthropic portion of the work, including club-room for girls and bathrooms; and a higher building for educational work and classrooms, with club-rooms for men and boys, and dormitories for girls facing the new road. |
| **1899.** | | | |
| Leo Street School, Asylum Road, Peckham. | T. J. Bailey | 24,070 | The building is of three storeys and is designed to accommodate 358 boys, 358 girls and 422 infants. The site being small, a playground is provided on top of the building. Each department consists of six classrooms and a hall, with cloak-rooms, lavatories and a teachers' room. There is also a drawing classroom. |
| **1901.** | | | |
| Schools, Sandown and Oakley Roads, South Norwood. | Carter Pegg | 17,800 | The schools provide accommodation for 1,310 children. Each department comprises a central hall 79ft. by 32ft., with a classroom for children at either end; also five classrooms for sixty each, two cloak-rooms, a teacher's room, store and two entrances. There are two towers, in each of which a small dinner-room is provided. The external walls are of hollow 16in brickwork, faced externally with Leicestershire red bricks and Darley Dale stone dressings, the roofs being covered with Staffordshire tiles. |

## S.E. DISTRICT: HOTELS, &c.

| BUILDING. | ARCHITECT. | APPROXIMATE COST. | REMARKS. |
|---|---|---|---|
| **1877.** | | £ | |
| British Workman Temperance Public-House, Westow Street, Upper Norwood. | F. H. Streatfield | 1,450 | |
| **1881.** | | | |
| "The Founder's Arms," Blackfriars. | W. C. Banks | — | The facings are of brick and the dressings of Portland stone, both of which are freely carved. The pilasters to ground floor are of Dalbeattie granite. |
| **1885.** | | | |
| Queen's Hall, New Coffee Tavern and Workmen's Dwellings Glengall Road, Old Kent Road. | E. Hoole | — | The buildings are in white brickwork, relieved with red arches and strings. The hall accommodates 300 persons. |
| "The Equestrian" Tavern, Blackfriars Road. | J. H. Smith | — | The front is in red brick, with stone dressings and granite pilasters on the ground floor. The carving was executed by Mr. Gilbert Seale. |
| **1893.** | | | |
| The "Crown and Cushion" Public-house, Westminster Bridge Road. | W. M. Brutton | 4,000 | The front is executed in red rubbers and Portland stone, the shop front and fittings being of polished American walnut and ash. |
| Coffee Palace, Norwood Road. | Treadwell & Martin. | — | In the front portion of the building are placed first- and second-class tea- and coffee-rooms, and second-class smoking room, whilst at the rear is a meeting hall to accommodate 156 persons, with cloak-rooms and lavatories. The materials used are red bricks for facings to ground floor, with Ham Hill stone dressings to bay-window, entrance-door, corbels, &c. The gable is timber, brick nogged, with rough-cast in spaces between timbers. The roof is covered with Broseley tiles. |
| **1896.** | | | |
| "Dover Castle" Hotel, Westminster Bridge Road. | Treadwell & Martin. | — | The accommodation provided consists of, on the ground floor, bars and grill-room; on the first floor, billiard-room, public dining-room, public sitting-room, office, &c. The second and third floors contain private dining-rooms, bed- and sitting-rooms, &c. The kitchens and staff-rooms are on the fourth floor. Externally the building is faced with Lawrence's red bricks, with Monk's Park stone dressings, the roofs being covered with green slates. |
| **1898.** | | | |
| "Elephant and Castle' Estate, Newington Butts. | John Farrer | 36,000 | The estate forms an island, the northern portion having a frontage to Newington Butts and Walworth Road of about 80ft. and an average width of 34ft., occupied by the hotel, which has on the ground floor a saloon, luncheon, private and public bars, and a billiard-room and cellarage in the basement. On the first floor are a billiard-room and a large dining-room; on the second and third floors fourteen bedrooms and two large sitting-rooms, and on the top-floor kitchen and domestic offices and four bedrooms. The other part of the site, which has a frontage of 80ft. to Newington Butts and an average width of 42ft., consists of nine lock-up shops on the ground and basement floors. The first floor is designed to form three suites of offices. The three upper floors, which are approached from the Walworth Road, are planned for eight suites of residential flats |
| "Thomas à Becket" Public-house, Old Kent Road. | Richard Willock | — | This building, which replaced the old one on the same site, is built in the Renaissance style. |
| **1899.** | | | |
| "Salisbury" Hotel High Street, Lewisham. | Albert L. Guy | — | |

*(To be continued.)*

## Keystones.

**The L.C.C. Central School of Arts and Crafts** opened its winter term on Monday. A pamphlet giving particulars of the classes can be obtained from the curator of the school, 316 Regent Street, W.

**For Testing Steel Tapes** used in surveying, the provision of a gallery 100ft. long and the necessary outfit at the National Physical Laboratory, Teddington, is under consideration.

**South London Improvements.**—One of the latest improvements which the Parks and Open Spaces Committee of the L.C.C. have now in hand is that of the conversion of a fine piece of land near the City end of Blackfriars Road into a public garden.

**A new Vaccine Station.**—The Government has purchased two acres of land near the site of the British Museum buildings at Hendon for a central vaccine station. The British Museum building has only just been begun, and will take at least another twelve months to complete.

**Generous Gift to the Northern Architectural Association.**—Mr. William Glover, F.R.I.B.A., has given £1,000 in Consols to the Northern Architectural Association, of which he is past-president. Not less than one-quarter or more than one-half of this may be used at a future date towards building a home for the Association. The annual interest on the capital amount is to be used for their educational work.

**New Police and Fire Station at Manchester.**—The Manchester Corporation are just completing the construction of a new police and fire station which will be a great improvement to the Bradford (Mill Street) district. This has been brought about by the demolition of the old police buildings in Fairfield Street consequent upon the extensions which the L. & N.W. Railway Co. are making at the London Road Station and in the vicinity.

**Memorial to Dr. Murray at Mill Hill School.**—The permanent memorial of the commencement of the Historical English Dictionary by Dr. Murray, of Oxford, is now in course of construction at Mill Hill School. It was while a master at Mill Hill that Dr. Murray planned and began the dictionary, and the new building now being erected from the designs of Mr. T. E. Collcutt, F.R.I.B.A., is placed on the site of the original scriptorium in the school grounds. It will be opened early in October.

**Stoke Guardians and their late Architect.**—At a meeting of the Stoke Board of Guardians last week it was intimated that the dispute between the Board and their late architect, Mr. Lynam, as to charges amounting to £1,958 5s. 9d. for preparing various schemes for remodelling the workhouse had been amicably settled. The charge in dispute was £688 15s. for a second set of drawings (for an amended scheme), which the architect contended was quite a proper charge. To avoid any friction, Mr Lynam expressed his willingness to settle the account for £1,300. This was accepted.

**Westminster Cathedral.**—Of the ten superb onyx monoliths—15ft. in length and 2ft. in diameter—recently delivered at the Westminster Basilica, but six have arrived intact; three frankly broken across the middle, a fourth seamed with a palpable crack. This will not tend to accelerate the decorous pace at which the work of completion is going forward. Many months must slip by before the loss can be made good. Possibly it is quite irreparable. The blocks were the largest yet hewn in the piece, and it was at first doubtful whether the African quarries could meet the unusual demand. Incompetent packing seems responsible for the damage.

**A new Lych-Gate at Wonston Church, Hants,** has been erected of Hampshire oak about 400 years old.

**New Schools at Oxford** have been erected for the parish of St. Mary and St. John. The cost of the new block, with the site, was rather more than £6,000.

**A new Worcestershire Asylum** is being erected from designs by Mr. G. T. Hine. The total cost, inclusive of site, will be about £215,000.

**Hangleton Church, Brighton.**—The work of repairing the roof is making such good progress that it is hoped the building will be ready for reopening before the end of this month.

**Underground Railway Improvements.**—At Aldersgate Station, and at several West End stations on the Metropolitan Railway where the staircases are dark, the company are carrying out important alterations with the object of giving passengers as much daylight as possible.

**A New Fire Station at Salford** is being erected in Albion Place from designs by Mr. Henry Kirkley, of Manchester. Whilst the station contains little that is not found in one or other of modern fire stations, it is claimed that it goes far to embody all their merits. There is, however, one new feature, in the form of a horse-bath, introduced by Mr. Bentley, the chief officer of the brigade. It is found that valuable horses are often lost after severe exertion because they catch a chill. This, it is hoped, the bath will prevent.

**Mr. Thomas A. Moodie** recently left Glasgow for South Africa to take up the position of principal architect of the Central South African Railway Company at Johannesburg. Competitive plans from selected firms were invited by the company for the new railway offices at Johannesburg, and, on his application, Mr. Moodie was allowed to join in the competition. His plans have been selected, and arrangements are being made for the carrying out of his design, which is estimated to entail an expenditure of half a million sterling. Mr. Moodie was educated in the Architectural Department of Glasgow Technical College.

**No Dust Destructor to be near Windsor Castle.**—Some months ago the Windsor Corporation decided to erect a dust destructor near the river, and obtained the sanction of the Local Government Board. But a protest was entered on behalf of the King on the ground that the selected site was too near the castle and was likely to cause annoyance to the Royal Family, especially during certain winds. The intervention of the Crown was much resented, but it was deemed wise not to offend the King, and a new site has now been taken further away. The drainage works at Windsor Castle are being reconstructed prior to His Majesty's arrival for his November visit. The road approaches are also being put in good order.

**Caerwent Exploration.**—Interesting work continues to be carried out in the excavation of Roman remains at Caerwent, near Newport, Mon. The most important features recently brought to light are some Roman houses near the schools, with a later house overlaying one of them. It is impossible to fix the date of this later house, but it is not Roman, though it includes a small subterranean chamber, or cellar, built largely of Roman materials. The line of pipes which was traced near the North Gate was again discovered in this field, with the addition of a small concrete culvert, and some interesting portions of streets have been discovered. The present is the fourth year of the exploration committee's work, and it promises to produce results even more important than those of last year.

**A new Memorial Cottage** at Dame Margaret's Home, Washington, has been erected by Mr. Hunter Washington from the design of Mr. A. B. Plummer, F.R.I.B.A., architect, Newcastle.

**Congregation as Decorators.**—The work of renovating the interior of Tolmer's Square Congregational Church, London, has been done by the members working in the evening under the direction of the pastor, the Rev. F. Hastings. The volunteer workmen have also provided gratuitously the cost of the wood required for the alterations.

**A Sewerage Dispute at Cambridge** has been going on for some time between the Cambridge Town Council and the Chesterton Rural District Council over the connecting of the sewers at Cherryhinton, near Cambridge, with the borough sewers. The matter has been referred to arbitration, and the umpire's award declares that the Town Council were perfectly justified in refusing to connect the Cherryhinton sewers with its own, because the former have not been properly constructed. The Cherryhinton ratepayers are holding indignation meetings on the subject, and are not backward in pointing out the insanitary state of the district consequent on an improper system of sewerage.

## Obituary.

**Mr. James Pryor,** builder, of Royston, died recently. He transferred his building business to Messrs. Ward some years ago.

**Mr. Thomas Mason,** builder, of Leicester, died last week at the age of sixty-three years. Deceased was a native of Enderby. He was apprenticed to Mr. W. Neale, builder. After serving his apprenticeship he started in business for himself, and was very successful.

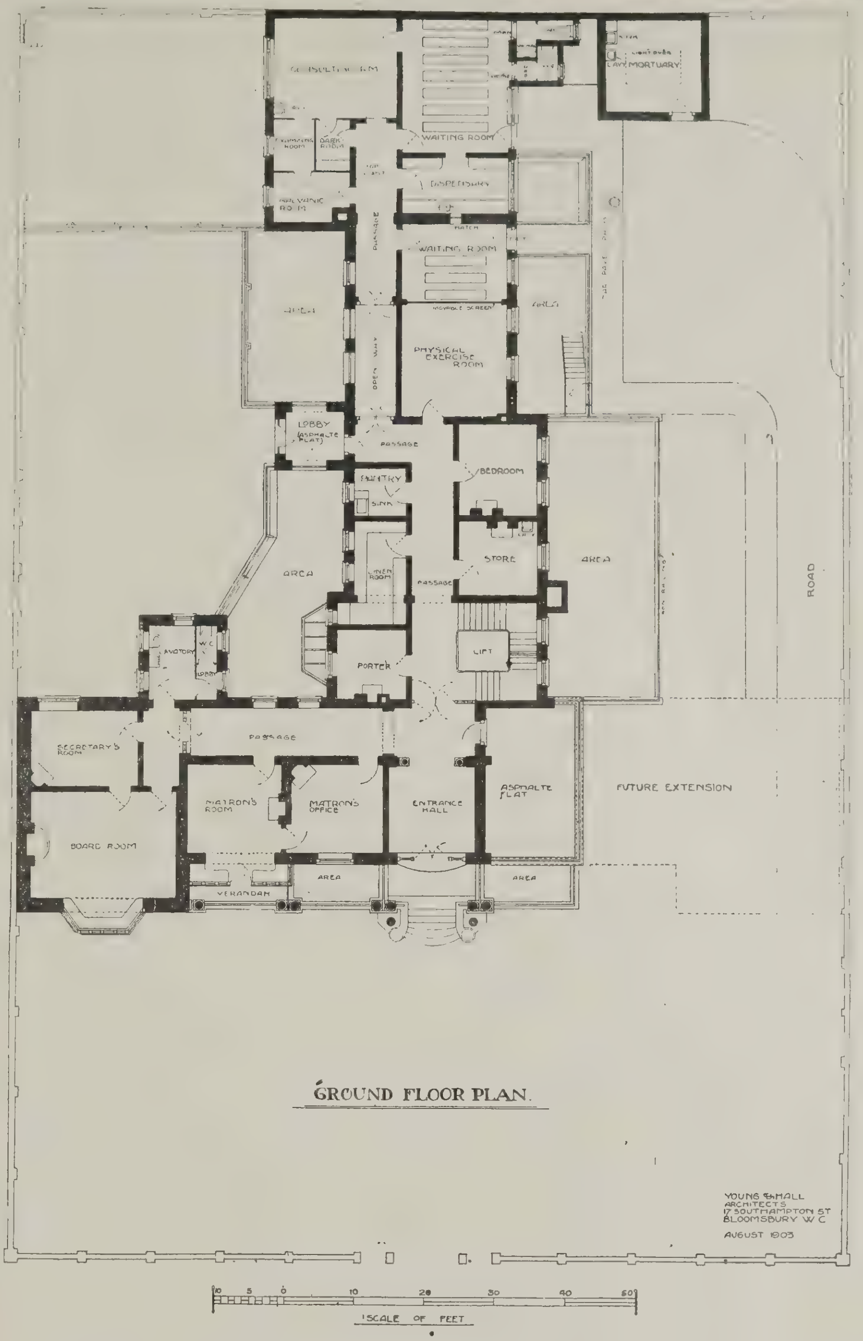
**Mr. Frederick Law Olmsted,** the eminent landscape architect of America, died recently at Boston. He was the first great landscape artist developed in Transatlantic surroundings, so that it would be safe to say he was the last, as most of those who remain have received their training from him. Mr. Olmsted was born in Hartford, Connecticut, on April 22nd, 1822. From his earliest years he was a wanderer. He first settled down upon a farm with rough surroundings, at Saybrook, New York, on Long Island Sound. However, he soon removed to better land on Slater Island, where he came into contact with Calvert Vaux, a young English architect, with whom, in later days, he formed a business partnership. In 1851 he made a trip to England, which brought forth his first book, "Walks and Talks of an American Farmer in England." By this time, somewhat late in life, he had begun to give attention to landscape work. He took a tour through the older States of the south, and wrote a series of letters on slavery which were published in book form. Two other books followed. In 1856, by a happy chance, he met one of the commissioners of the new Central Park in New York, then just authorized by the Legislature. He was chosen superintendent, and in conjunction with Mr. Vaux proposed the plan which, in competition with more than thirty others, won the first prize. This was practically the first attempt in America to apply art to the improvement or embellishment of nature in a public park. The work was done in such a satisfactory way that it was followed by plans for many other parks, and ultimately he was entrusted with the design and development of the landscape features of the Columbian Exhibition at Chicago in 1893. Working actively to the last, Mr. Olmsted was a frequent visitor to England, and recognized his obligations to this country.

# Bricks and Mortar.

**Aphorism for the Week.**

*In the British Museum it is quite right that the British public should see the Elgin marbles to the best advantage; but not that they should be unable to see any example of the sculpture of Chartres or Wells, unless they go to the miscellaneous collection at Kensington, where Gothic saints and sinners are confounded alike among steam thrashing-machines and dynamite-proof ships of war; or to the Crystal Palace, where they are mixed up with Rimmel's perfumery.*—RUSKIN.

**Our Plates.** THE new building of the Hospital for Epilepsy and Paralysis at Maida Vale, with the exception of about one-third of the front façade, affords accommodation for thirty-eight beds (out of the sixty which the complete building will contain), eight of which are in single rooms. The basement floor contains the kitchen, offices, boiler-house, transformer and battery-room, servants' hall, nurses' dining-room, coal-cellar, store-rooms, isolated foul-linen room and linen-airing room. The ground floor is planned as follows: In front is the main entrance, which will be the centre of the completed building; also, in the front block are the matron's-room, an adjacent waiting-room, the board-room, the secretary's office, a cloak-room and lavatory; in the back wing are a pantry, a room used temporarily as a chapel, porter's room, linen-room and the physical-exercise room; beyond these is the out-patients' department, consisting of waiting-room, consulting-room, examining-room, dark-room, galvanizing-room, dispensary and waiting-room for medicine; the one-storey detached building at the back of the site is the mortuary, and the whole of the out-patients' department is separated from the rest of the hospital by an open-air corridor. The first and second floors are identical in every respect, and each contains a ward for eight beds, one for seven beds, and four for one bed each; a large day-room, ward kitchen, wardrobe-room, bathroom and two sets of sanitary offices. A broad balcony, on to which beds and couches can be moved, is formed in front of the three front wards on each floor, and is accessible also to the wards having seven beds. At the back the patients have access on the first floor to a roof garden over the out-patients' department. The top floor is devoted entirely to rooms for the resident staff; here are eight bedrooms for nurses, one for the matron, and a large sitting-room, with a wide balcony attached, for nurses; and also five bedrooms for servants, three bathrooms, linen stores and the necessary sanitary offices. The cooking apparatus is heated by gas, and the lighting is, of course, electric. An hydraulic lift, large enough for a bed, a patient and two attendants, moves from the basement to the top floor. Provision is made for conveying, for medical purposes, a separate electric current from the battery in the basement to all the wards and the consulting-room. The building is heated by hot-water radiators, and there is a separate hot-water system for baths, &c. There is through ventilation to the wards, and the sanitary arrangements are, in a similar manner, cut off from the main building. The cost has exceeded £25,000, and to complete the design by the addition of the unbuilt wing will cost about £8,000 more. The hospital will then contain some sixty beds. The architects are Messrs. Young & Hall and the builders Messrs. Prestige & Co.—The house by Mr. C. F. A. Voysey was designed to be built on the brow of a hill at Blackheath overlooking London and the mouth of the Thames. The owner was anxious to have a good-sized laboratory and library, and, being a bachelor, did not require many bedrooms. The walls were to be brick rough-cast, the roof of green slate, and the entrance-porch to be in Irish black marble surmounted by a small gilded angel with a fiddle, denoting the owner's hobby. Inside the rooms were to be mostly panelled, the colour scheme being unstained oak and white plasterwork, with black marble dull-polished chimney-pieces.



HOSPITAL FOR EPILEPSY AND PARALYSIS MAIDA VALE: W.

**The Prix de Rome.** THE annual competition in Paris for the Prize of Rome in architecture has resulted in the award of the Grand Prix to M. Jaussely, pupil of MM. Daumet and Esquié. The first second grand prize was awarded to M. Wielhorski, pupil of M. Laloux; and the second second grand prize to M. Joulie, pupil of M. Pascal The subject of the composition was an unusually interesting one, being the arrangement of a public place. The programme indicated something closely resembling the Place de la Concorde, specifying that the open space should be bordered on one side by a river, crossed by a monumental bridge, and should be the terminus of several streets; while, facing upon it, should be three important buildings, a bourse, a military club and an artistic club, with gardens, porticos and so on; the open space itself being also adorned with statues and monuments. The whole composition, including the three buildings, was required to be contained in a space the longest dimensions of which should not exceed 350 metres. Although floor-plans of the three buildings were required, the scale of them was small, and, as it proved, they did not count for much in the award.

**A Restoration by Mr. Blomfield.** THE repairs to the old parish church of Great Chart, in Kent, are proceeding successfully. Mr. Reginald Blomfield is the architect and Messrs. Clark, of Lenham, are the builders. The fine old tower was found to be in a bad condition, the Kentish Rag used in its construction being of an inferior quality; strange that the church, in the very parish where the rock is found, should be built from weak strata of a stone which is otherwise almost everlasting. Unfortunately, the result of investigation is the decision that the irregular stonework of the tower must be re-covered in plaster. In addition, three new buttresses have been erected, the old ones having cracked, while the tower swayed so dangerously that the bells have been known to ring in rough weather. The windows are being re-made of Doulting stone. A lightning conductor will be erected, a complete system of drainage has been arranged, the water from the roofs being carried down to the pond; and over the south aisle a new lead roof is being constructed, as well as a new buttress. This is the work so far taken in hand—the part of the restoration for which funds have already been subscribed. But in addition it is equally important that the windows of the church should all be practically re-made (at a cost of £145), that further repairs should be carried out on the exterior and interior (at a cost of £225), and that the interior should be re-plastered (at a cost of £130). If sufficient funds cannot be obtained it will be necessary to eliminate the general repairs to the interior, making the further external and window restoration cost about £270.

**Street Names.** Every year about 500 names are added to the list of London streets. National events are remembered among them. It will not be a matter of surprise that Menelik, Joubert, Pretoria and Somali Streets now figure amongst the thoroughfares of the Metropolis. Similarly it is only natural that there should be a block of Coronation Buildings. Seaside resorts also rank prominently—an Aldeburgh Road, a Bexhill Terrace, a Tintagel Street. Presumably each title betokens the favourite holiday resort of the property owner Certain historical events never seem to lose their popularity. Consequently Waterloo and Vittoria are included amongst the new thoroughfares. Gladstone is immortalized in Hawarden Grove and Gambetta in the street bearing his name. A notable sign of the times is the tendency displayed to name thoroughfares after bygone notabilities connected with the district. This is especially observable in the neighbourhood of the Strand. Several theatrical and literary celebrities, including Mrs. Siddons, Macready and Dickens, are thus remembered close by the spots with which they were the more associated. At one time it was regarded as a pardonable act of egotism for a builder or property owner to give his own name to the streets he constructed. Happily this no longer holds good, and we are therefore spared the endless perpetuation of Smith Street, Smith Avenue, Smith Circus and so on.

**Sketching in Paris Museums.** Certain alterations have been made in the regulations of those museums which have come under the authority of the Service des Beaux-Arts of the City of Paris. Henceforth tickets giving permission to paint or sketch a definite work of art for purposes of study may be issued by the keepers on a written application. These tickets will be available (except on Mondays and other special days) from the hour of opening until 2 p.m. Permission to photograph will only be given to professional photographers, or to persons engaged in special studies requiring it, and special application must be made for authority to reproduce any photographs taken. The vexatious cloak-room restrictions are abolished, and visitors will no longer be deprived of their small belongings.

**Leeds and Yorkshire Architectural Society.**—On Thursday last the president (Mr. Butler Wilson, F.R.I.B.A.) and council entertained the members of the Library Association, who were holding their annual conference in Leeds, to a smoking concert at the Queen's Hotel, to meet the members of the Leeds Savage Club.

# Enquiries Answered.

*The services of a large staff of experts are at the disposal of readers who require information on architectural, constructional or legal matters. Questions should in all cases be addressed to the Editor. The querist's name and address must always be given, not necessarily for publication.*

### Fungus in a Floor.

South Bank.—W. S. A. writes: "Is there any cure for fungus in a floor? It has just cost a good sum to renew part of it, and the fungus is bursting through again. There seem to be plenty of ventilators in the building. Can anything be put on to kill the spawn?"

The appearance of the fungus is evidently due to dampness and the want of proper ventilation. The soil under the floor may not be properly drained and, if so, should be concreted over; but the reason is probably that the floor is not ventilated sufficiently, and the remedy is to put in a number of air-bricks so as to get a through current of air that will dry up all moisture. Dry-rot fungus cannot live in the absence of moisture. We also advise you to coat the underside of the boards with creosote oil or carbolineum avenarius, but no substance has yet proved permanently efficacious in the continual presence of damp.

### Open-Timber Trusses.

B. B. H. writes: "I should be glad to have your opinion on the strength of the roof shown by the accompanying drawing. The width of the room is 36ft. There are five of these trusses, and they are to be placed 11ft. 6in. apart. Buttresses 1ft. 6in. wide and 10ft. apart."

The trusses must be strengthened by bolts and plates as shown, the object being to prevent the spreading of the feet of the truss.

HENRY ADAMS.

### Books on Beverley Church and Continental Gothic Details.

Hull.—O. H. W. H. writes: "What book deals with St. Mary's Church, Beverley? Also, what books would you recommend for continental Gothic details, &c.?"

Messrs. A. Brown & Sons, of Hull, are the publishers of a thirty-six page pamphlet comprising two papers read before the British Association in 1890. One by W. Stephenson, M.R.C.S., deals with Beverley Minster, and the other, by Mr. John Bilson, A.R.I.B.A., with St. Mary's Church; both papers are worthy of study. For continental details, if accessible, I would recommend Gailhabaud's "Monuments Anciens et Modernes," an exhaustive work in four volumes; also "The Study-Book of Mediæval Architecture and Art," by Thomas King, published by Henry Sotheran & Co., Strand, in 1868. Both of these, however, are large and expensive works. There is however, a small book, "L'Architecture Gothique," by Edouard Corroyer, published by Les Librairies-Imprimeries Réunies, Paris, which deals with continental Gothic. But all these books are more or less difficult of access except in good technical libraries, so that those dealing with this subject more readily attainable are good histories, such as Sturgis's or Banister Fletcher's (new edition), published by B. T. Batsford, 94, High Holborn.

M.

### Instruction in Sanitary Plumbing.

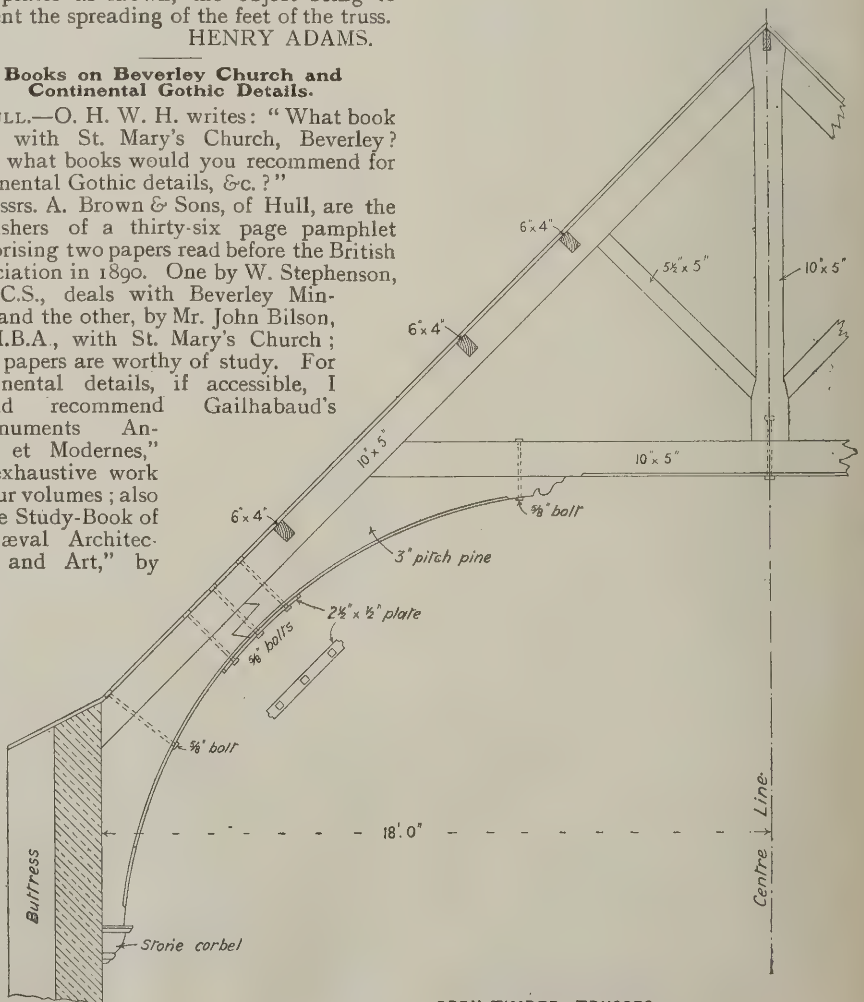
Sanitas writes: "Could you through your valuable paper inform me as to where I could obtain a correspondence course of tuition for the honours grade of the City and Guilds of London in the principles of sanitary plumbing?"

Tuition by correspondence is not satisfactory. Study J. Wright Clarke's "Plumbing Practice, a text-book for Plumbers" (Batsford, 94, High Holborn, London, W.C., 6s. nett), and then make friends with a local plumber to put you through a course of practice.

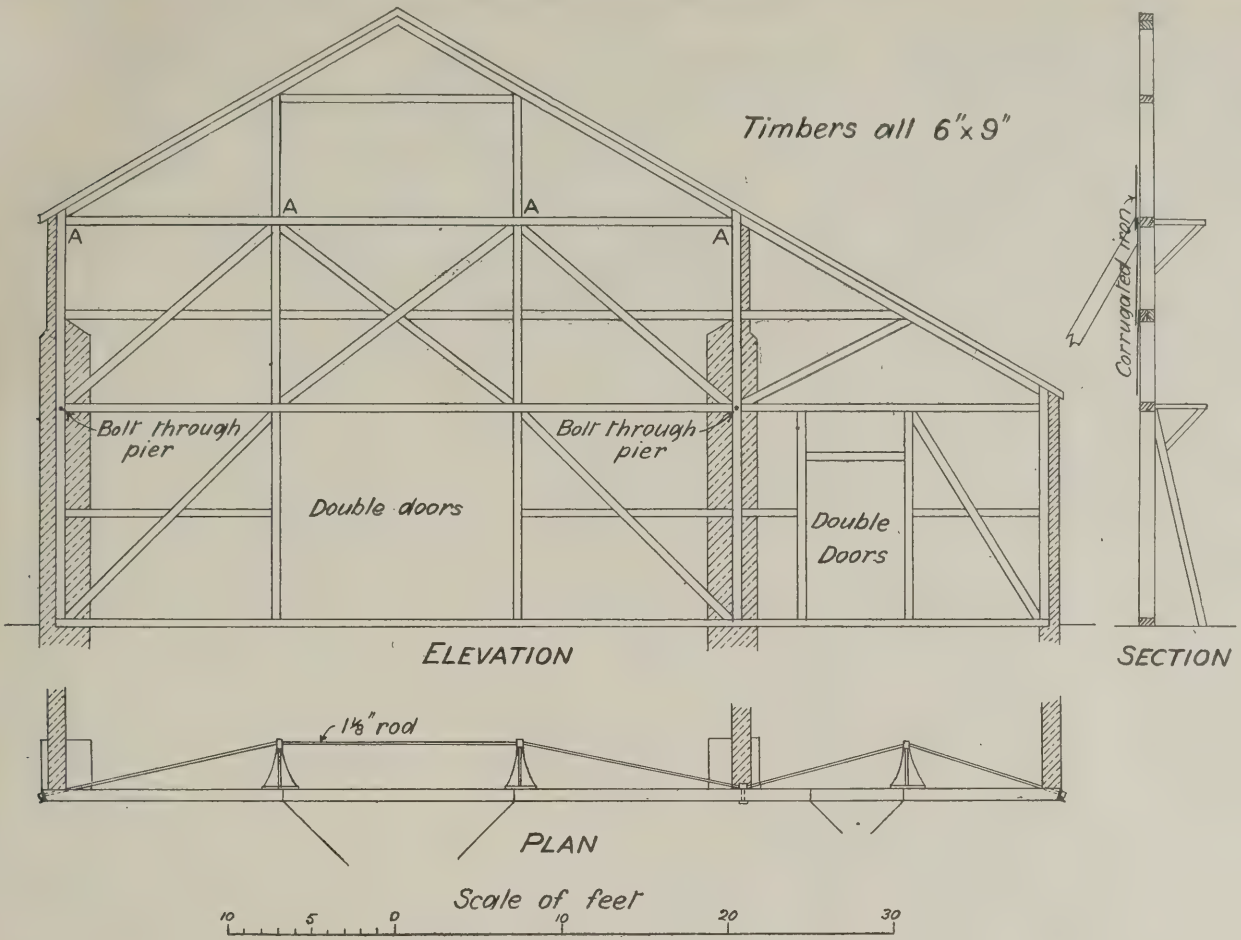
HENRY ADAMS.

### Measuring Buildings.

Oldbury.—W. T. B. writes: "(1) Kindly name some buildings around West Bromwich suitable to measure for the R.I.B.A. intermediate examination. (2) Would the wall arcading in the Lady Chapel at Lichfield be suitable for one sheet? (3) What book explains how to measure and set out tracery windows? (4) In the drawing of the 30ft. roof-truss do you advise a king- or queen-post truss? Does it matter about the scantlings being



OPEN-TIMBER TRUSSES.



CORRUGATED IRON SCREEN FOR END OF BUILDING.

worked out exactly to formulæ? (5) Can you suggest anything in this district for the Classic Ornament sheet?"

(1) See reply to an enquiry on buildings to measure near Birmingham on p. 302 of our issue for July 1st last. (2) Yes, the wall arcading would do. (3) Spiers's "Architectural Drawing," to be obtained from us, 10s. 6d. post free. (4) Queenpost. The scantlings should be worked out exactly to formulæ and the nearest stock sizes adopted; the stress diagram should be shown. (5) No, we cannot. There are casts in the Birmingham Municipal School of Art which you might draw from, but probably Spiers's "Orders" will serve your purpose.

### Corrugated Iron Screen for End of Building.

LONGTON. — PERPLEXED writes: "The accompanying plan (not reproduced) shows the end of a building to have a temporary corrugated iron screen and wood framing. No part of the screen, struts, &c., can project inside the room more than 3ft., on account of machinery. Kindly show the method of constructing the wood framing, with sizes of the timbers, &c. Would it be advisable to have trusses as shown to help to withstand the wind-pressure?"

The framing for the screen can be made as shown by the accompanying illustration, and horizontal trusses will be desirable to stiffen it against the pressure of the wind, which may amount to 6 tons on the larger one above the double doors. Outside struts are unsightly, but often failure occurs from a reduction of pressure outside allowing the air inside to suddenly expand, so that it will be desirable to shore up the screen from the outside at points AAAA. It is this internal expansion of the air that is supposed to be the active force when the roof of a building is lifted off in a gale. HENRY ADAMS.

### Pressure of Water in Pipe.

HARROGATE.—E. A. writes: "The bottom of a reservoir 10ft. deep and 40ft. square is 20ft. above a certain level; 200yds. away is a cistern, the top of which is 16ft. above the level, connected with the reservoir by a 3in. pipe. With 3ft. of water in the reservoir, what would be the pressure at the outlet to the cistern, (A) when the connecting pipe drops shortly to the lower level and continues in an irregular manner, up and down, to the cistern; (B) when the pipe is laid straight from one to the other? Does the bending of the pipe affect the pressure? In a case (C) with a cistern 6ft. wide and 8ft. deep, to which a 4in. pipe is connected at the bottom, how far will the water in the cistern, when full, rise up the pipe?"

When a pipe is laid with vertical undulations there is a liability for air to collect at the top of each bend and form an air-lock, which will stop the flow of water, and it is not always convenient to provide an escape valve. If the air can be removed, the pressure will be practically the same for (A) and (B), as there will be very little extra length in (A). In the second case (B), calling the total length of pipe 210yds., the diameter 3in. and the head 6ft., assume the flow to be 50 gals. per minute, the outlet from the reservoir being bell-mouthed. Then the head in feet required to produce the necessary velocity at outlet $= \frac{G^2}{215d^4} = \frac{50^2}{215 \times 3^4} = \frac{2500}{215 \times 81} = {}^{\cdot}144$ft., and the head required to overcome friction $= \frac{G^2L}{240d^5} = \frac{50^2 \times 210}{240 \times 3^5} = 9$ft., or a total of 9·144ft. head; but the actual head is only 6ft., and the flow varies approximately at $\sqrt{\text{head}}$; therefore, the true flow will be about $\left(\frac{\sqrt{6}}{\sqrt{9}}\right) =$

$$50\left(\frac{2{\cdot}45}{3}\right) = 40{\cdot}83,$$ say 40 gals. per minute.

In the third case (C) the water will stand at the same level both in cistern and pipe. For information on construction of cisterns and tanks see "Designing Ironwork," 2nd series, Part III. (E. & F. N. Spon, 125, Strand, W.C., 2s.). HENRY ADAMS.

### A Village Church School.

WOKINGHAM. — TADY PAWPAS writes: "Who was the architect of the village church school situated on the main road about half-way between Conway and Tal-y-Cafn, North Wales? It seems to have been erected about eight months, and is rough-cast, with a blue and green slate roof."

We do not set out to answer such questions as this. We can hardly be expected to know who is responsible for the buildings in every village throughout the country. However, through the courtesy of Mr. William Hughes, builder and contractor, of Conway, we are able to state that the building you enquire about is Caerhun Church School, near Tal-y-Cafn, of which Mr. Herbert L. North, of Conway, was the architect.

### Books on Perspective and Graphic Statics.

HULL.—A. G. writes: "Kindly name a good book (very elementary) on perspective, and also a similar book on graphic statics. I do not wish to pay more than 3s. for either."

Middleton's "Architectural Perspective," price 2s. 6d., and Mitchell's Advanced Building Construction" (which contains chapters on Graphic Statics), price 5s. 6d., together with the articles on building construction which have appeared in our columns recently, should serve your purpose. If you require anything more, you might get Professor Karl von Ott's "Elements of Graphic Statics," price 5s. All these books can be obtained from us at 6, Great New Street, E.C., at the prices named, post free.

# Builders' Notes.

**The Isolation Hospital, Ticehurst, Sussex,** is being warmed and ventilated by means of Shorland's patent Manchester grates and exhaust roof ventilators, supplied by Messrs. E. H. Shorland & Brother, of Manchester.

**A Works Department for Dublin.**—The Dublin Corporation are proposing to establish a Central Municipal Workshop in Dublin. At present there are eighteen shops under the control of the different committees, in which the wages annually amount to £5,580. While under the present system the expenditure is £7,615, it would be £7,715 under the proposed system, but the centralization of the work would ultimately lead to greater economy and efficiency.

**American Bricklaying Methods.**—Three hundred bricklayers employed by the Westinghouse Electric Co. on the new electricity generating station at Neasden, now being erected for the Metropolitan Railway, went out on strike last week on account of the "driving" methods adopted. Their places were filled by fresh men. The special grievance was that unless they were at their places on the scaffold, &c., and started work the moment the hooter went, continuing to work right up to the last moment, they were dismissed.

**Bricks from Glass Waste.**—A company has begun operations in Indiana, U.S.A., for the purpose of making bricks from the waste thrown out by glass factories. All sorts of brickwork will be undertaken, and it is estimated that from 40,000 to 50,000 will be turned out each day. The problem of dealing with the enormous quantities of sand, &c., used in glass-making has long harassed the owners of factories, and now bricks are being made from it the waste will become a source of revenue. The sand is put under hydraulic pressure after having been treated in a certain way. This results in a well formed brick, which hardens without being fired. But we have yet to learn something about its durability.

**Bradford Building Trade Arbitration.**—In the early part of this year a dispute occurred in Bradford between the operative masons and their employers. The former wished to do away with a clause in the agreement of January, 1902, which provided that no strike or lock-out should be permitted where the dispute rested solely upon the question of the employment on the same job of society men and non-society men. At the request of the mayor the Board of Trade appointed an arbitrator (Sir William Margby), who sat twice at the Town Hall to take evidence on both sides. The arbitrator has now made his award, which is in favour of the men. In other respects he rules that the agreement shall stand.

**Trade Union Congress.** — At the Trade Union Congress held at Leicester last week Mr. Edmund Browne, L.C.C., standing counsel to the congress, said: "(1) It is perfectly legal for any body of men to refuse to work with any other body of men, but it is perfectly illegal for the first body of men to refuse to work without giving their notices in and working out their agreements. (2) A strike is in itself a perfectly legal thing, but the means by which a strike is brought about might be perfectly illegal." A resolution was passed declaring that the time had arrived when the hours of labour should be limited to eight per day in all trades and occupations in the United Kingdom, and that this should be made a test question at the next elections. The Parliamentary Committee was instructed to introduce a Bill into the House of Commons with a view to the eight-hour day becoming law. Next year's congress will be held at Leeds.

# Electrical Notes.

Mandalay is going ahead with its electric tramway line, and it is hoped that cars will be running before the end of the year. The municipality hopes soon to introduce electric lighting.

**Woking and Bagshot Light Railway.**—An important project is on foot for the construction of electric tramways at Woking and a light railway connecting that populous neighbourhood with Chobham, Windlesham and Bagshot. At present there are no facilities of any kind for giving cheap and ready access to this pleasant part of Surrey, which the scheme in question would open up for residential purposes, in addition to greatly benefiting the farmers and tradespeople.

**New Westinghouse Coupler.**—Mr. George Westinghouse has invented a new coupler which combines in itself and automatically performs the functions of all the various couplers, buffers, electrical cables and hoses which must be joined between two electric cars. The new device, which is being shown by the Westinghouse Brake Company at their King's Cross works, is entirely controlled from a single handle. Turning this handle to one position sets the coupler ready to engage automatically with the similar coupler on another car as soon as the two come in contact. A slight further turn of the handle opens the air-brake cock and the train is now completely connected up and ready to start. A single turn of the same handle serves to shut the cock of the air-brake, and then to disengage the couplers, leaving the cars free to separate.

**Electrical Tests at the National Physical Laboratory.**—In the electrical department of the new National Physical Laboratory at Teddington, standards and other apparatus have been installed for testing resistances from ·0001 to 10,000 ohms, pressures to 1,000 volts and currents to 250 amperes. Standards of electro-motive force—Clark and Weston cells—have been constructed, and a minute investigation as to their relation to one another, and their behaviour under various conditions, is well advanced. As the standard of electrical resistance is defined as that of a tube of mercury, the preparation of a set of such tubes, to reconstruct the fundamental unit, the ohm, is now practically complete. Delicate apparatus has also been installed for investigating the magnetic quality of iron used in the manufacture of dynamos and transformers, and some interesting results as to change in magnetic quality—in some cases an alarming falling-off with prolonged exposure to working conditions—have been furnished to senders of samples. A research undertaken for the Engineering Standards Committee on the electrical and mechanical properties of the various insulating materials used for dynamo building is nearly complete, the effects of prolonged exposure to heat and of atmospheric changes on the insulating power of many of these materials being much greater than was supposed. The alternating current equipment, part of which has been presented by Messrs. Siemens Brothers, has not yet arrived, but preparation is now being made both for this and for great extension of the range covered by the electrical tests, a recent important addition being the necessary outfit for accurate measurement of the alternating voltage required to break down insulators of any description. Conjointly with the engineering department tests of the general and mechanical properties of certain steels have been made, and in the engineering laboratory an investigation into the effect of wind-pressure on structures such as bridges, &c., is being carried out, in continuation of the work of Sir Benjamin Baker.

# Current Market Prices

## FORAGE.

| | | £ | s. | d. | £ | s. | d. |
|---|---|---|---|---|---|---|---|
| Beans .. .. .. | per qr. | 1 | 14 | 0 | 2 | 0 | 0 |
| Clover, best .. .. | per load | 4 | 7 | 6 | 4 | 15 | 0 |
| Hay, best .. .. .. | do. | 3 | 15 | 0 | 4 | 10 | 0 |
| Sainfoin mixture .. | do. | 3 | 15 | 0 | 4 | 5 | 0 |
| Straw .. .. .. | do. | 1 | 10 | 0 | 2 | 2 | 0 |

## OILS AND PAINTS.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Castor Oil, French .. | pet cwt. | 1 | 0 | 5 | | — | |
| Colza Oil, English .. | do. | 1 | 4 | 0 | | — | |
| Copperas . .. .. | per ton | 2 | 0 | 0 | | — | |
| Lard Oil .. .. .. | per cwt. | 2 | 15 | 0 | 2 | 17 | 0 |
| Lead, white, ground, carbonate .. .. | do. | 1 | 4 | 10 | | — | |
| Do. red .. .. .. | do | 1 | 0 | 4½ | | | |
| Linseed Oil, barrels .. | do. | 0 | 19 | 4½ | 0 | 19 | 6 |
| Petroleum, American .. | per gal. | 0 | 0 | 6 | 0 | 0 | 6⅛ |
| Do. Russian .. | do. | 0 | 0 | 4¾ | 0 | 0 | 4⅞ |
| Pitch .. .. .. | per barrel | 0 | 8 | 0 | | - | |
| Shellac, orange .. .. | per cwt. | 8 | 5 | 0 | 8 | 6 | 0 |
| Soda, crystals .. .. | per ton | 3 | 2 | 6 | 3 | [illegible] | [illegible] |
| Tallow, Town .. .. | per cwt. | 1 | 6 | 3 | 1 | 6 | 6 |
| Tar, Stockholm .. .. | per barrel | 1 | 0 | 6 | | | |
| Turpentine .. .. | per cwt. | 2 | 3 | 4½ | | — | |

## METALS.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Copper, sheet, strong .. | per ton | 75 | 0 | 0 | | — | |
| Iron, Staffs., bar.. .. | do. | 6 | 5 | 0 | 8 | 10 | 0 |
| Do. Galvanised Corrugated sheet .. | do. | 11 | 0 | 0 | 11 | 5 | 0 |
| Lead, pig, Soft Foreign.. | do. | 11 | 6 | 3 | 11 | 7 | 6 |
| Do. do. English common brands . .. | do. | 11 | 12 | 6 | | - | |
| Do. sheet English 3lb. per sq. ft and upwards .. | do. | 14 | 0 | 0 | | — | |
| Do. pipe .. .. .. | do. | 15 | 0 | 0 | | — | |
| Nails, cut clasp, 3in. to 6in. | do. | 9 | 5 | 0 | | — | |
| Do. floor brads .. | do. | 9 | 0 | 0 | | — | |
| Steel, Staffs.. Girders and Angles .. .. | do. | 5 | 15 | 0 | 6 | 7 | 6 |
| Do do. Mild bars .. | do. | 6 | 7 | 6 | 7 | 2 | 6 |
| Tin, Foreign .. .. | do. | 122 | 10 | 0 | 123 | 0 | 0 |
| Do. English ingots .. | do. | 124 | [illegible] | 0 | 125 | 0 | 0 |
| Zinc, sheets, Selesian .. | do. | 23 | 10 | 0 | | - | |
| Do. do Vielle Montaigne | do. | 24 | 10 | 0 | | — | |
| Do. Spelter .. .. | do. | 21 | 0 | 0 | 21 | 2 | 6 |

## TIMBER.

### Soft Woods.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Fir, Dantzic and Memel | per load | 1 | 13 | 0 | 3 | 0 | 0 |
| Pine, Quebec, Yellow .. | do. | 5 | 5 | 0 | 6 | 5 | 0 |
| Do. Pitch .. .. | do. | 2 | 12 | 0 | 3 | 3 | 0 |
| Laths log, Dantzic .. | per fath. | 4 | 10 | 0 | 5 | [illegible] | 0 |
| Do. Petersburg .. | do. | 7 | 5 | 0 | | -- | |
| Deals, St. Petersburg. Unsorted Yellow, 3×9 | do. | 9 | 0 | 0 | | — | |
| Do. do. do. .. 2½×7 | do. | 9 | 0 | 0 | | — | |
| Do. do. do. White, 3×11 | do. | 8 | 0 | 0 | | — | |
| Do. do. do. .. 3×9 | do. | 8 | 10 | 0 | | — | |
| Do. do. do. .. 2½×7 | do. | 7 | 5 | 0 | | — | |
| Do. do. Yellow, 1st, 3×11 | do. | 16 | 10 | 0 | | — | |
| Do. do. do. 1st, 3×9 | do. | 13 | 5 | 0 | | — | |
| Do. do. do. 3rd, 2½×7 | do. | 9 | 5 | 0 | | — | |
| Do. do. White, 1st, 3×11 | do. | 12 | 10 | 0 | | — | |
| Do. do. do. 3rd. 2½×7 | do. | 8 | 5 | 0 | | — | |
| Do. Skelleftea Yellow, 3rd, 2½×7 | do. | 9 | 5 | 0 | | — | |
| Do. Munksund, Yellow, 1st, 2½×7 | do. | 10 | 0 | 0 | | — | |
| Do. do. do. 1st, 2×9 | do. | 14 | 0 | 0 | | — | |
| Do. do. do. 2nd, 2×9 | do. | 14 | 0 | 0 | | — | |
| Do. do. do. 2nd, 2½×7 | do. | 10 | 0 | 0 | | — | |
| Do. do. do. 3rd, 3×9 | do. | 9 | 5 | 0 | | — | |
| Do. Miramichi, Spruce, 1st, 2½×7 | do. | 8 | 15 | 0 | | — | |
| Do. do. do. 2nd, 2½×7 | do. | 8 | 15 | 0 | | — | |
| Do. do. do. 3rd, 2½×7 | do. | 8 | 15 | 0 | | — | |
| Do. Nederkalix, Yellow, 1st, 2½×7 | do. | 11 | 0 | 0 | | — | |
| Do. Söderhamn, Yellow, 3rd, 4×11 | do. | 17 | 15 | 0 | | — | |
| Do. do. do. 3rd, 3×11 | do. | 17 | 5 | 0 | | — | |
| Do. do. do. 3rd, 3×9 | do. | 15 | 0 | 0 | | — | |
| Do. do. do. 3rd 3×7 | do. | 11 | 10 | 0 | | — | |
| Do. Blankaholm, dry Yellow 2nd, 4×9 | do. | 9 | 10 | 0 | | — | |
| Do Asbacka, Yellow, 5th, 2½×7 | do. | 9 | 15 | 0 | | — | |
| Do. Trangsund, Yellow, 1st, 4×7 | do. | 8 | 15 | 0 | | — | |
| Do. do. do. 2nd, 4×7 | do. | 8 | 15 | 0 | | — | |
| Do. Björneborg, Yellow, 4th, 3×9 | do. | 9 | 5 | 0 | | — | |
| Do. Langrör, Yellow, 4th, 2½×7 | do. | 10 | 0 | 0 | | — | |
| Do. Archangel, Yellow, 2nd, 3×7 | do. | 13 | 10 | 0 | | — | |
| Do. do. do. 3rd, 3×9 | do. | 13 | 10 | 0 | | — | |
| Do. Räfsö, Yellow, 3rd, 2½×7 | do. | 10 | 0 | 0 | | — | |
| Do. Riga, Unsorted Yellow, 3×8×10-15ft. | do. | 7 | 5 | 0 | | — | |
| Do. do. do. do. | do. | 7 | 10 | 0 | | — | |
| Do. do. do. White, 3×11 | do. | 8 | 10 | 0 | | — | |
| Do do. do. 3×10½ | do. | 7 | 10 | 0 | | — | |
| Do. do. do. 3×10 | do. | 7 | 15 | 0 | | — | |
| Do. do. White, 2nd, 3×9 | do. | 8 | 0 | 0 | | — | |
| Do. do. do 3rd, 3×9 | do. | 8 | 0 | 0 | | — | |
| Do. Galatz, White, 1st, 3×11 | do. | 8 | 5 | 0 | | — | |
| Do. do. do. 4th. 2½×11 | do. | 6 | 5 | 0 | | — | |
| Do. Quebec, Spruce, 4th, 3×9×12ft. | do. | 9 | 9 | 0 | | — | |
| Do. do. do. 5th, 3×9×12ft. | do. | 8 | 0 | 0 | | — | |
| Battens, all kinds .. | do. | 6 | 15 | 0 | 14 | 0 | 0 |
| Flooring Boards 1in. prepared, 1st .. .. | per square | 11 | 0 | 0 | 11 | 9 | 0 |
| Do. 2nd .. .. | do. | 0 | 9 | 0 | [illegible] | 10 | 6 |
| Do. 3rd &c. .. .. | do. | 0 | 8 | 0 | | — | |

# Coming Events.

**Wednesday, Sept. 16.**
SANITARY INSTITUTE (Lectures and Demonstrations for Sanitary Officers, Part I.)—Mr. E. J. Steegmann on "Natural Forces: Light, Heat, Electricity; Chemistry," at 7 p.m.

**Friday, Sept. 18.**
SANITARY INSTITUTE (Lectures and Demonstrations for Sanitary Officers, Part I.)—Mr. E. J. Steegmann on "The Atmosphere: Pressure and Composition; Air; Combustion and Respiration," at 7 p.m

**Saturday, Sept. 19.**
NORTHERN ARCHITECTURAL ASSOCIATION.—Excursion to Sunderland.

SANITARY INSTITUTE (Lectures and Demonstrations for Sanitary Officers, Part I.).—Inspection and Demonstration at "Wimbledon Sewage Works" at 3 p.m., conducted by C. H. Cooper.

**Monday, Sept. 21.**
SANITARY INSTITUTE (Lectures and Demonstrations for Sanitary Officers, Part I.).—Mr E. J. Steegmann on "Meteorology," at 7 p.m.

**Wednesday, Sept. 23.**
SANITARY INSTITUTE (Lectures and Demonstrations for Sanitary Officers, Part I.).—Mr. J. Priestley on "Sanitary Law"—I. at 7 p.m. Inspection and Demonstration in the "District of Islington and at the Borough Disinfecting Station," at 2 p.m., conducted by James R. Leggatt.

**Friday, Sept. 25.**
SANITARY INSTITUTE (Lectures and Demonstrations for Sanitary Officers, Part I.).—Mr. J. Priestley on "Sanitary Law"—II. at 7 p.m.

INSTITUTE OF SANITARY ENGINEERS.—Examination in Practical Sanitary Science in London and Manchester (first day).

# Complete List of Contracts Open.

| DATE OF DELIVERY. | WORK TO BE EXECUTED. | FOR WHOM. | FROM WHOM FORMS OF TENDERS MAY BE OBTAINED |
|---|---|---|---|
| | **BUILDING:** | | |
| Sept. 17 | Preston—Power Station, &c. | Corporation | W. H. Tittensor, 25 Burrow Road, Preston. |
| „ 17 | Wern, Salop—Market House and Assembly Hall | Urban District Council | J. Brown, 12 Castle Street, Shrewsbury. |
| „ 17 | London, S.E.—Repairs to Roofs, &c. | Southwark Union Guardians | A. J. Wade, 36 Fifth Avenue, Harrow Road, W. |
| „ 17 | Greenwich—Jobbing Works | Borough Council | Borough Engineer, Town Hall, Greenwich Road, S.E. |
| „ 17 | Bridlington—Greenhouse | Corporation | E. R. Matthews, Borough Surveyor, Town Hall, Bridlington. |
| „ 17 | Epsom—Destructor Buildings | Urban District Council | E. R. Capon, Surveyor, Council Offices, Bromley Hurst, Church Street, Epsom. |
| „ 17 | High Wycombe—Lodge | Rural District Council | B. L. Reynolds, 12 Easton Street, High Wycombe. |
| „ 17 | Nantyfyllon, Maesteg. Wales—Chapel | — | Rev. H. S. Thomas, Garnwern Terrace, Nantyfyllon. |
| „ 17 | Ivybridge, Devon—Cowhouse | — | Adams & Son, Estate Agents, Plympton. |
| „ 18 | Barry—Public Library | Urban District Council | T. B. Fordoff, Clerk, Council Offices, Barry, Glam. |
| „ 18 | Fairlight, nr. Hastings—Coastguard Station | Admiralty | Director of Works Dept., Admiralty, 21 Northumberland Av., W.C. |
| „ 18 | Portsmouth—Manual Instruction Centres | Education Committee | A. H. Bone, Architect, Cambridge Junction, Portsmouth. |
| „ 19 | Lancaster—Produce Market | Properties Committee | J. C. Mount, Borough Surveyor, Town Hall, Lancaster. |
| „ 19 | Bridlington—Urinal | Corporation | E. R. Matthews, Borough Surveyor, Town Hall, Bridlington. |
| „ 19 | Bridlington—Lengthening Bridge, &c. | Corporation | E. R. Matthews. Borough Surveyor, Town Hall, Bridlington. |
| „ 19 | Aberaman, Wales—Rebuilding | Cwmbach Industrial Co-operative Society. Ltd. | T. Roderick, Architect, Aberdare. |
| „ 19 | Horton, Epsom—Padded Rooms | London County Council | R. W. Partridge, Clerk, 6 Waterloo Place, S.W. |
| „ 19 | Newfield, Durham—Converting | Workmen's Club & Institute, Ltd. | J Foster, Challies Street, Newfield, Willington. |
| „ 19 | Scarborough—Alterations, &c., to Stables | Town Council | Borough Engineer, New Town Hall, St. Nicholas St., Scarborough. |
| „ 21 | London, E.—Alterations, &c. | John Symons & Co., Ltd. | C. Dunch, Architect, St. Clement's House, Clement's Lane, Lombard Street, E.C. |
| „ 21 | Motherwell, Scotland—Library | Town Council | J. Burns, Town Clerk, Motherwell. |
| „ 21 | Middlesbrough—School | Education Committee | J. M. Bottomley & Son & Wellburn. 28 Albert Rd., Middlesbrough. |
| „ 21 | Portsmouth—Alterations, &c., to Public Baths | — | Borough Engineer, Town Hall, Portsmouth. |
| „ 21 | Rugby—Three Cottages, Road, &c. | Urban District Council | D. G. Macdonald, Surveyor, Rugby. |
| „ 21 | Knowle, Fareham, Hants—Engine House, &c. | Southampton County Council | W. J. Taylor, County Surveyor, The Castle, Winchester. |
| „ 22 | London, N.—Sorting Office | Commissioners of H.M. Works, &c | J. Wager, H.M. Office of Works, Storey's Gate, S.W. |
| „ 22 | Little Ilford—Materials and Labour at Cemetery | City of London Corporation | Engineer, Guildhall, E.C. |
| „ 22 | Wigan—Enlargement of Post Office | Commissioners of H.M. Works, &c. | Secretary, H.M. Office of Works, Storey's Gate. S.W. |
| „ 22 | Fraserburgh, Scotland—Manse | West U.F. Church | W. S. F. Wilson, Architect, Frithside Street, Fraserburgh. |
| „ 22 | Poulton, nr. Dover—Laundry, &c. | Dover Town Council | H. E. Stilgoe, Bor. Engr., Maison Dieu House, Biggin St., Dover. |
| „ 22 | Wandsworth—Floor over Baths | Borough Council | Surveyor, High Street, Wandsworth. |
| „ 23 | Rhymney, Wales—Twenty-nine Houses | Victoria Building Club | Victoria Hotel, Rhymney. |
| „ 23 | Dartford, Kent—Alterations, &c., to House | Metropolitan Asylums Board | T. D. Mann, Clerk, Board's Offices, Embankment, E.C. |
| „ 23 | Birmingham—School | Education Committee | A. Rowse, 3 Newhall Street, Birmingham. |
| „ 23 | Swindon, Wilts—Car Depot Stores, &c. | Corporation | Lacey & Sillar, 78 King Street, Manchester. |
| „ 24 | Barry Docks—Mercantile Marine Office | Commissioners of H.M. Works, &c | Secretary, H.M. Office of Works. Storey's Gate, S.W. |
| „ 24 | Woolwich—Public Baths | Borough Council | F. Sumner, Borough Engineer, Maxey Road, Plumstead. |
| „ 24 | Saltash—Renovating, &c., School | — | J. H. Pooley, 104 Fore Street, Saltash. |
| „ 25 | Abbey Wood, Kent—School | Erith Education Committee | W. Egerton, 12 Queen's Road, Erith. |
| „ 25 | St. George-in-the-East—Sundry Works | Guardians | J. R. Browne Guardian's Offices, Rain Street, Old Gravel Lane, E. |
| „ 26 | Saltburn—Church and Schools | — | Garside & Pennington, Architects, Pontefract. |
| „ 26 | Radcliffe, Lancs—Cemetery Works | Urban District Council | W. L. Rothwell, Engineer, Council Offices, Radcliffe. |
| „ 26 | Wigan—Cemetery Works | Burial Board | W. B. Johnson & Son, 31 King Street, Wigan. |
| „ 26 | Steppingley, Beds—Isolation Hospital | Ampthill R.D.C. | F. T. Tanquery, Clerk, County Court Hall, Ampthill, Beds. |
| „ 28 | Cowes Portland Cement | Urban District Council | J. W. Webster. Engineer. Council Offices, Cowes. |
| „ 29 | Ealing, W.—Additions, &c., to Telephone Exchange | Commissioners of H.M. Works, &c | Secretary, H.M. Office of Works, &c., Storey's Gate, S.W. |
| „ 29 | Halifax—Silversmith's Works | C. Horner | J. F. Walsh & G. Nicholas, Architects, Museum Chambers, Halifax. |
| „ 29 | Ealing Dean, W.—Sorting Office | Commissioners of H.M. Works, &c. | Secretary, H.M. Office of Works, &c, Storey's Gate, S.W. |
| „ 30 | London, N.W.—Tenements, Stabling, &c. | Hampstead Borough Council | O. E. Winter, Borough Engineer, Town Hall, Hampstead. |
| Oct. 1 | Bradford—Office, Store, Shed, &c. | Corporation | J. Watson, Engineer Town Hall, Bradford. |
| „ 2 | Barry—Central Public Library | Urban District Council | Hutchinson and H. Payne, 11 John Street, W.C. |
| „ 2 | St. Mary's, Isles of Scilly—Coastguard Buildings | — | Superintending Civil Engineer, H.M. Dockyard, Devonport. |
| „ 6 | London, E.C.—Two Underground Conveniences | Corporation | Engineer, Guildhall, E.C. |
| „ 6 | London, E.—Repairing, &c., Pumping Station | London County Council | Engineer's Department, County Hall, Spring Gardens, S.W. |
| 7 | Naas—Sixteen Labourers' Cottages | Rural District Council | D. G. Purcell, Clerk, Council Offices, Naas. |
| „ 7 | Fulham—Lodges, Refreshment Rooms, Lavatories, &c. | Borough Council | F. Wood, Borough Engineer, Town Hall, Fulham, S.W. |
| | **ENGINEERING:** | | |
| Sept. 17 | Devizes—Bacteria Beds, &c. | Urban District Council | Beesley, Son & Nichols, 11 Victoria Street, Westminster, S.W. |
| „ 17 | Lichfield—Sewerage Works | Rural District Council | W. E. Rogers, Engineer, Rugeley. |
| „ 18 | Rio de Janeiro—Rolling Stock | Brazilian Central Railway Co. | Commercial Intelligence Branch. Bd. of Trade, 50 Parliament St. S.W |
| „ 18 | Rotherham—Electric Watering Car, &c. | Tramways Committee | Mr. Grant, Tram Depot, Rotherham. |
| „ 19 | Worthing, Norfolk—Iron Bridge | Rural District Council | W. M. Barton, Clerk. Guildhall, East Dereham. |
| „ 19 | Madrid—Telephone Apparatus | — | Direction General of Posts and Telegraphs, Madrid. |
| „ 20 | London, W.—Sweeping Machine | Paddington Borough Council | E. B. B Newton, Borough Surveyor, Town Hall, Paddington, W. |
| „ 21 | London, S.E.—Destructor, &c. | Bermondsey Borough Council | F. Ryall, Town Clerk, Town Hall, Bermondsey, S.E. |
| „ 21 | Stewarton, Scotland—Reservoir | Town Council | W. R. Copland, 146 West Regent Street, Glasgow. |
| „ 22 | Ferrol and Bilbao, Spain—Copper Tubes | Spanish Gunboat "Don Alvaro d'Bagan." | Commandant-General, Arsenal, Ferrol. |
| „ 22 | Irthlingborough, Northants—Pipelaying, &c. | Urban District Council | J. Waugh, Engineer, Sunbridge Chambers, Bradford. |
| „ 22 | Irthlingborough, Northants—Engines | Urban District Council | J. Waugh, Engineer, Sunbridge Chambers. Bradford. |
| „ 22 | Irthlingborough, Northants—Pipes | Urban District Council | J. Waugh, Engineer. Sunbridge Chambers, Bradford. |
| „ 22 | Irthlingborough, Northants—Valves, &c. | Urban District Council | J. Waugh, Engineer, Sunbridge Chambers, Bradford. |
| „ 22 | Jassy. Roumania—Waterworks | Corporation | Mayor, Jassy, Roumania |
| „ 23 | Howden, Yorks—Lighting | Parish Council | G. H. Shaw, Chairman, Council Offices, Howden. |
| „ 23 | Estremoz-Castello de Vide—Railway | Portugal State Railways | Sessions Hall, Council of Administration of State Rlys., Lisbon |
| „ 26 | Eccles Lancs.—Bridge Reconstruction | Corporation | C. S. Allott & Son, 46 Brown Street, Manchester. |
| „ 26 | Rochdale—Cables and Switchboard Alterations | Guardians | Shephard & Watney, Greek Street Chambers, Leeds. |
| „ 27 | Pozoblanco, Spain—Electric Lighting Town | — | Municipal Authorities, Pozoblanco. |
| „ 28 | Launceston, Tasmania—Electric Meters | — | J. Terry & Co., 7 Great Winchester Street, E.C. |
| „ 28 | Martock, near Yeovil—Water Supply Extension | Rural District Council | Bailey-Denton & Partners, Engineers, 9 Bridge St., Westminster, S.W. |
| „ 30 | Conway—Sewerage and Waterworks | Rural District Council | T. B. Farrington, Engineer, Trinity Square, Llandudno. |
| „ 30 | Brisbane, Queensland—Postal and Telegraph Material | — | Department Stores, Navy Street, Brisbane. |
| „ 30 | Amsterdam—Railway Materials | — | Mart Hijhoff, Nobelstreet 18, The Hague. |
| Oct. 1 | Utrecht, Netherlands—Electricity Supply Station | Town Council | Gemeente-Secretaire of Utrecht. |
| „ 1 | Angram, Bradford—Masonry Dam | Corporation | J. Watson, Waterworks Engineer, Town Hall, Bradford. |
| „ 1 | Bradford—Light Railways | Corporation | J. Watson, Waterworks Engineer, Town Hall, Bradford. |
| „ 1 | Bradford—Service Reservoirs | Corporation | J. Watson, Waterworks Engineer, Town Hall, Bradford. |
| „ 1 | Bradford—Masonry Dam, &c. | Corporation | J. Watson, Waterworks Engineer, Town Hall, Bradford. |
| „ 5 | Dublin—Electric Crane | Port and Docks Board | J. P. Griffith, Engineer, East Wall, Dublin. |
| „ 5 | Brighton—Tramway Materials, &c. | Town Council | F. J. Tillstone, Town Clerk, Town Hall, Brighton. |
| „ 5 | Nottingham—Pumping Engines | Water Committee | S. Moore, General Manager, Water Department, St. Peter's Square, Nottingham. |
| „ 5 | London, S.E.—Steam Engines | London County Council | County Hall, Spring Gardens, S.W. |

# Complete List of Contracts Open —*continued.*

| DATE OF DELIVERY. | | WORK TO BE EXECUTED. | FOR WHOM. | FROM WHOM FORMS OF TENDERS MAY BE OBTAINED. |
|---|---|---|---|---|
| | | **ENGINEERING**—*continued.* | | |
| Oct. | 6 | Vauxhall—Steel Superstructure and Granite Piers of Bridge | London County Council | Engineer's Department, County Hall, Spring Gardens, S.W. |
| „ | 10 | Valencia—Port Works | Committee | Secretaria da la Junta de obras del, puerto de Valencia. |
| „ | 19 | Johannesburg—Electrical Plant | Municipal Council | Mordey & Dawbarn. 82 Victoria Street, Westminster, S.W. |
| „ | 26 | Harrogate—Iron and Glass Pump-room and Colonnade | ——— | F. Bagshaw, Borough Engineer, Municipal Offices, Harrogate. |
| „ | 30 | Marina, Upper Barracca, Malta—Lift | Crown Agents for the Colonies | Receiver-General and Director of Contracts, Valletta, Malta. |
| Nov. | 2 | Perth, Western Australia—Railway Carriages | ——— | Agent-General for Western Australia, 15 Victoria St, Westminster. |
| Dec. | 15 | Los Andes, Chili—Railway | ——— | Commercial Intelligence Branch, Board of Trade, 50 Parliament Street, S.W. |
| 1904.<br>Feb. | 1 | Cairo—Three Road Bridges over Nile | Ministry of Public Works | Commercial Intelligence Branch, Board of Trade, 50 Parliament Street, S.W. |
| | | **FURNITURE:** | | |
| Sept. | 21 | Exeter—Furniture | Devon County Council | County Education Office 50 Queen Street, Exeter. |
| „ | 21 | Selly Oak, near Birmingham—Furniture, &c. | King's Norton Union Guardians | Master of Workhouse, Selly Oak |
| „ | 23 | Nottingham—Furnishing | Board of Guardians | G. M. Howard, Clerk. Poor Law Offices, Nottingham. |
| „ | 23 | Worksop—Furniture, &c. | Isolation Hospital Committee | F. Hopkinson, 40 Bridge Street, Westminster, S.W. |
| | | **IRON AND STEEL:** | | |
| Sept. | 17 | Birmingham—Pipes | Tame & Rea District Drainage Board. | J. D. Watson, Engineer, Tyburn, near Birmingham. |
| „ | 21 | Northampton—Fencing | Corporation | A. Fidler, Engineer, Guildhall, Northampton. |
| „ | 22 | Amsterdam—Steel Rails, &c. | ——— | Engineer-in-Chief, Maatschappij tot Exploitatie van Staatsspoorwegen, Utrecht |
| „ | 26 | Radcliffe Lancs—Fencing, Gates, &c. | Urban District Council | W. L. Rothwell, Engineer, Council Offices, Radcliffe. |
| Oct. | 3 | Bridlington—Ironwork | Property Committee | Mangnall & Littlewoods, 42 Spring Gardens, Manchester. |
| „ | 21 | Adelaide, South Australia—Railway Stores | ——— | Chief Mechanical Engineer, Islington, South Australia. |
| | | **PAINTING AND PLUMBING:** | | |
| Sept. | 17 | Dewsbury—Painting | Guardians | Master of Workhouse, Dewsbury. |
| „ | 22 | London, E.C.—Paints, &c. | Burma Railways Co., Ltd. | Company's Offices, 76 Gresham House, Old Broad Street, E.C. |
| | 23 | Dartford, Kent—Re-decorating, &c., House | Metropolitan Asylums Board | T. D. Mann, Clerk, Board's Offices, Embankment, E.C. |
| Oct. | 6 | Stratford—Re-painting, &c., Buildings | London County Council | Engineer's Department, County Hall, Spring Gardens, S.W. |
| | | **ROADS AND CARTAGE:** | | |
| Sept. | 17 | Felixstowe—Stone | Urban District Council | S. E. Fisher, Council's Surveyor, Town Hall, Felixstowe. |
| „ | 17 | Croydon—Making-up Roads | Rural District Council | E. J. Gowen, Clerk, District Council Offices, Town Hall, Croydon. |
| „ | 17 | Greenwich—Kerb | Borough Council | Borough Surveyor, Town Hall, Greenwich Road, S.E. |
| „ | 17 | New Barnet—Materials, &c | Urban District Council | H. York, Surveyor, Council Offices, Station Road, New Barnet. |
| „ | 18 | Ashford, Kent—Road Works | Urban District Council | W. Terrill, 5 North Street, Ashford, Kent. |
| „ | 19 | Tamworth—Granite | Rural District Council | H. J. Clarkson, 22 Church Street, Tamworth. |
| „ | 21 | Newhaven Sussex—Granite | Urban District Council | Surveyor, Council Offices, Newhaven |
| „ | 21 | Paddington—Making-up and Paving Roads | Borough Council | E. B. B. Newton, Borough Surveyor, Town Hall, Paddington, W. |
| „ | 21 | Batley, Yorks—Street Works | Town Council | O. J. Kirby, Borough Surveyor, Branch Road, Batley. |
| „ | 21 | London, N.—Tar Paving | Southgate Urban D.C. | C. G. Lawson, Surveyor, Council's Offices, Palmers Green, N. |
| „ | 22 | Lytchett Minster, Dorset—Roads, &c. | Sir Elliott Lees | R. T. S. Seymour, Surveyor, Wimborne. |
| „ | 22 | Willesden—Road-making, &c. | Urban District Council | O. C. Robson, Engineer, Public Offices, Dyne Road, Kilburn, N.W. |
| „ | 23 | Chiswick, W.—Making-up Roads | Urban District Council | J. Barclay, Surveyor, Town Hall, Chiswick. |
| „ | 23 | Hammersmith, W.—Making-up, &c. | Hammersmith Borough Council | Mr Mair, Surveyor, Town Hall, Broadway, Hammersmith. |
| „ | 23 | Blackpool—Stone | ——— | J. S. Brodie, Borough Surveyor, Town Hall, Blackpool. |
| „ | 25 | Nelson, Lancs—Street Works | Sewage and Streets Committee | B. Ball, Borough Engineer, Town Hall, Nelson. |
| „ | 26 | Wigan—Roads, &c. | Burial Board | W. B. Johnson & Son, 31 King Street, Wigan. |
| „ | 26 | Shoreham, Sussex—Granite and Flints | Urban District Council | F. Slaughter, Council's Surveyor, West Street, Shoreham. |
| „ | 29 | Bromley, Kent—Materials | Rural District Council | E. Haslehurst, Clerk, Union Offices, Bromley, Kent |
| „ | 29 | Walthamstow—Street Works | Urban District Council | G. W. Holmes, Engineer, Town Hall, Walthamstow. |
| „ | 31 | Dunstable—Steam Rolling | Town Council | G. Simcox, Borough Surveyor, Town Hall, Dunstable. |
| | | **SANITARY:** | | |
| Sept. | 17 | Bradford—Lime | Gas Committee | Chemical Works, Frizinghall. |
| „ | 17 | Cannock, Staffs—Sewers, &c. | Rural District Council | H. M. Whitehead, Council's Engineer, Pankridge, Stafford. |
| „ | 17 | Plympton, Devon—Removal of Refuse | District Council | F. W. Cleverton, 4 Buckland Terrace, Plymouth. |
| „ | 17 | Greenwich—Making Entries into Sewers | Borough Council | Borough Surveyor, Town Hall, Greenwich Road, S.E. |
| „ | 17 | Croydon—Sewers, &c. | Rural District Council | R. M. Chart, Union Bank Chambers, Croydon. |
| „ | 18 | Dringhouses, Yorks—Sewerage Works | Bishopsthorpe R.D.C. | Fairbank & Son, Engineers, Lendal Chambers, York. |
| „ | 19 | Harrogate—Drainage Works | ——— | E. W. Dixon, 5 Prospect Crescent, Harrogate. |
| „ | 19 | Carperby, Yorks—Sewerage Works | Aysgarth R.D.C. | Rodwell & Sons, Engineers, West Witton, Leyburn, R.S.O |
| „ | 19 | Shenfield, Essex—Sewer | Billericay R.D.C. | T. H. Jones, Parliament Mansions, Victoria St., Westminster, S.W |
| „ | 21 | Billericay, Essex—Sewer | Rural District Council | R. J. W. Layland, Surveyor, Billericay. |
| „ | 21 | Northampton—Sewer, &c. | Corporation | A. Fidler, Engineer, Guildhall, Northampton |
| „ | 22 | Denbigh—Sewerage Works | Mayor and Corporation | Bailey-Denton & Partners, Engineers, 9 Bridge Street, Westminster, S.W. |
| „ | 23 | Easingwold, Yorks—Sewerage Works | Rural District Council | Fairbank & Son, Engineers, Lendal Chambers, York. |
| „ | 23 | Sevenoaks—Sewerage Works | Rural District Council | T. Hennell, 6 Delahay Street, Westminster |
| „ | 24 | Wymington—Sewage Disposal Works | Bedford R.D.C. | M. Sharman, Clerk, 1 Harper Street, Bedford. |
| „ | 26 | Wigan—Drains, &c. | Burial Board | W. B. Johnson & Son, 31 King Street, Wigan. |
| „ | 26 | Lichfield, Staffs—Converting Privies | Gas Company | Clerk, Gas Office, Queen Street, Lichfield. |
| „ | 29 | Buntingford, Herts—Drainage Works | Guardians | E. G. Thody, Surveyor, High Street, Buntingford. |
| „ | 30 | Formby, Lancs—Sewerage Works | West Lancs R.D.C. | C. A. Atkinson, 11 Tithebarn Street, Liverpool. |
| Oct. | 5 | Barcelona, Spain—Sewerage and Drainage Works | ——— | Municipal Authorities, Barcelona. |
| „ | 6 | Becton and Erith, Kent—Lime, &c. | London County Council | Engineer's Department, County Hall, Spring Gardens, S.W. |
| „ | 6 | London—Underground Conveniences | Streets Committee | Engineer, Public Health Department, Guildhall, E C. |
| No date | | Hendon—Removal of Refuse | Central London Sick Asylums | F. W. Bailey, Clerk, District Offices, Cleveland Street Asylum Fitzroy Square, W. |
| | | **TIMBER:** | | |
| Sept. | 28 | London, E.C.—Telegraph Poles | ——— | S. C. Hoolley, 17-19 Bedford Street, London, W.C. |

# List of Competitions Open.

| DATE OF DELIVERY | | DESIGNS REQUIRED. | AMOUNT OF PREMIUM. | DEPOSIT REQUIRED FOR CONDITIONS, &c. | BY WHOM ADVERTISED. |
|---|---|---|---|---|---|
| Sept. | 22 | Ayr—Hospital, &c. | ——— | ——— | J. E. Shaw, Clerk, Lunacy Board, County Buildings, Ayr. |
| „ | 25 | Earlestown, Lancs—Memorial Monument | £10. | ——— | C. Cole, Hon. Sec., South African War Relief Fund Committee, Tow Hall, Earlestown. |
| „ | 26 | Leyland, Lancs—Laying-out Land, &c. | £15 15s. | ——— | M. H. Wilkinson, 21 Towngate, Leyland. |
| „ | 29 | Brighton—Hospital | £50, £30, £20. | £1 1s. | L. Holmes, 76 West Street, Brighton. |
| „ | 30 | Dublin—Workmen's Cottages | £20. | ——— | F. B. Ormsby, Secretary, Kingsbridge Terminus, Dublin. |
| Oct. | 1 | Heywood—Library | £30, £20, £10. | £1 1s. | J. A. Settle, Borough Engineer, Municipal Buildings, Heywood. |
| „ | 2 | Bromley, E.—Public Library | £75, £25. | 10s. 6d. | H. Heckford, Borough Surveyor, Council Offices, High Street, Poplar. |
| „ | 7 | Saltwood—Sewage Disposal | £31 10s. | ——— | R. Lonergan, 11 Cheriton Place, Folkestone. |
| „ | 12 | Rawtenstall—Free Library, &c. | £100, £50, £30. | £2. | A. W. Lawson, Borough Surveyor, Municipal Offices, Rawtenstall. |
| „ | 26 | Harrogate—Iron & Glass Pump-room & Colonnade | ——— | £1 | F. Bagshaw, Borough Engineer, Municipal Office, Harrogate. |
| Nov. | 14 | Tamworth—Public Library | £20, £10, £5 | ——— | J. Matthews, Town Clerk, Bolebridge Street, Tamworth. |
| „ | 21 | Sunderland—Additions and Alterations to Town Hall. | £100, £50, £25. | £5. | J. W. Moncur, Borough Engineer, Town Hall, Sunderland. |
| 1904<br>Mar. | 31 | Vienna—Machinery to Lift Boats on Canal | 100,000, 75,000 and 50,000 kronen. | ——— | Austro-Hungarian Consulate-General, 22 Laurence Pountney Lane, E.C. |

# Tenders.

*Information from accredited sources should be sent to "The Editor" at latest by noon on Monday if intended for publication in the following Wednesday's issue. Results of Tenders cannot be accepted unless they contain the name of the Architect or Surveyor for the work.*

*Addressed postcards on which lists of tenders may be stated will be sent post free on application to the Manager,* BUILDERS' JOURNAL, 9, *East Harding Street, E.C.*

**Abercynon (Wales).**—For the erection of a new infant school in Carnetown, Abercynon, to accommodate 250 children, for the Llanwonno School Board. Mr. A. O. Evans, architect, Post Office Chambers, Pontypridd:—

| | | | |
|---|---|---|---|
| J. Monday | £4,035 | 8 | 5 |
| D. G. Price | 3,846 | 0 | 0 |
| Keene & Wells | 3,787 | 0 | 0 |

**Abram (near Wigan, Lancs).**—For the erection of new public offices, workshops, stables and appurtenances, for the Abram Urban District Council:—

| | |
|---|---|
| Hilton & Ince, Ashton-in-Makerfield | £3,010 |
| A. Bywater, Pemberton | 2,900 |
| P. Pennington, Ashton-in-Makerfield | 2,895 |
| D. Ablett, Wigan | 2,875 |
| J. Johnson & Son, Wigan | 2,839 |
| H. & F. Lomax, Platt Bridge | 2,795 |
| J. Wilson & Co.,* Wigan | 2,697 |
| J. G. & F. Wood, Bolton | 2,614 |

* Accepted.

**Bollington (Macclesfield).**—For the erection of three shops at Bollington, for the Macclesfield Equitable Provident Society, Ltd. Messrs. Whittaker & Bradburn, architects, 19, King Edward Street, Macclesfield:—

| | | | |
|---|---|---|---|
| G. Roylance & Co., Ltd. | £1,820 | 0 | 0 |
| J. Clayton | 1,635 | 0 | 0 |
| T. Weard, Bollington | 1,600 | 0 | 0 |
| Gorton & Wilson | 1,580 | 0 | 0 |
| H. Berry & Sons* | 1,578 | 17 | 7 |
| J. Dakin | 1,566 | 0 | 0 |
| Clayton Brothers, Poynton | 1,450 | 0 | 0 |

* Accepted. [Rest of Macclesfield.]

**Birmingham.**—For the works comprised in the construction of five sewage silt tanks, four bacteria beds, each one acre in area, intake chamber, inlet and outlet channels, gauge basins, &c. together with the laying and jointing of cast-iron supply pipes, varying in diameter from 54in. to 6in., and other works in connection therewith, for the Birmingham Tame and Rea District Drainage Board. Mr. John D. Watson, engineer:—

| | | | |
|---|---|---|---|
| B. Whitehouse & Sons, Birmingham | £37,969 | 0 | 0 |
| J. Byrom, Bury | 37,6[illegible]0 | 0 | 0 |
| H. Lovatt, Wolverhampton | 36,666 | 18 | 3 |
| Bentley & Lock, Leicester | 35,950 | 7 | 8 |
| Lock, Andrews & Price, Nottingham | 34,000 | 0 | 0 |
| B. Cooke & Co., Westminster, S.W. | 33,963 | 0 | 0 |
| C. H. Walker & Co., Ltd., Westminster, S.W. | 33,130 | 0 | 0 |
| G. Holloway, Wolverhampton | 33,000 | 0 | 0 |
| A. Braithwaite & Co., Newlay | 31,916 | 17 | 9 |
| J. D. Nowell & Sons, Westminster, S.W. | 29,500 | 0 | 0 |
| Currall, Lewis & Martin, Ltd., Birmingham | 29,238 | 15 | 0 |
| T. Lowe & Sons, Burton-on-Trent | 28,943 | 0 | 0 |
| T. Smart, Nottingham | 28,507 | 0 | 0 |
| J. S. Dawson, Buxton | 27,517 | 7 | 9 |
| A. Kellett, Ealing, W. | 26,660 | 0 | 0 |
| J. Hodson & Son, Nottingham | 26,550 | 0 | 0 |
| W. Cunliffe,* Kingston-on-Thames | 25,633 | 0 | 0 |

* Accepted.

**Chadwell Heath (Essex).**—For the erection of houses situate in Whalebone Lane, Chadwell Heath, for Mr. F. Flower. Mr. J. M. H. Gladwell, architect, High Street, Stratford, E.:—

| | |
|---|---|
| Death | £4,680 |
| E. Jones | 3,370 |
| D. J. Deeks* | 3,250 |

* Accepted.

**Clutton.**—For the execution of the following works, for the Clutton Rural District Council: the provision and laying of about 5,150 lineal yds. of 3in. and of about 780 lineal yds. of 2in. cast-iron water-mains, with all the necessary fittings, branches, and other works in the parish of Chilcompton, Somerset. Mr. William F. Bird, C.E., engineer, Midsomer Norton, near Bath:—

| | | | |
|---|---|---|---|
| C. Franks, Ubley | £2,800 | 0 | 0 |
| G. Summers, Shipham | 2,650 | 0 | 0 |
| Free Brothers, Marlborough | 2,301 | 12 | 8 |
| Smith & Marchant, Shepton Mallet | 1,842 | 13 | 0 |
| Bevan & Sons, Gloucester | 1,834 | 12 | 2 |
| Willis & Son, Bath | 1,766 | 5 | 0 |
| Harvey, Swadlincote | 1,688 | 10 | 10 |
| Shaw & Sons, Nottingham | 1,676 | 0 | 0 |
| Smith & Son, Williton | 1,671 | 11 | 2 |
| Hall & Roberts, Warminster | 1,610 | 0 | 0 |
| Collins & Co., Barry | 1,573 | 13 | 11 |
| Macdonald, Blaina | 1,510 | 2 | 5 |

| | | | |
|---|---|---|---|
| Rutter & Sons, Washington | £1,456 | 12 | 0 |
| Woodward & Co.,* Gloucester | 1,442 | 15 | 10 |

* Accepted.

**Coventry.**—For the erection of six houses, King Edward's Road, for the Perseverance Co-operative Society, Ltd. Messrs. Harrison & Hattrell, architects, 23, Hertford Street, Coventry:—

| | | | |
|---|---|---|---|
| R. Wooton | £1,750 | T. Hancox | £1,415 |
| C. G. Hill | 1,730 | Hallam & Co. | 1,315 |
| Goode | 1,535 | E. Harris* | 1,300 |
| W. Yardley | 1,450 | | |

* Accepted. [All of Coventry.]

**Dowlais (Wales).**—For the rearrangement of the inside of the chapel, new galleries, seating, &c., for the trustees of the Hermon Chapel, Dowlais. Mr. Arthur O. Evans, architect, Pontypridd:—

| | |
|---|---|
| W. M. Williams, Dowlais | £2,627 |
| E. & A. Frith, Macclesfield | 2,160 |
| E. Jones, Dowlais | 1,993 |
| Knox & Wells, Cardiff | 1,985 |
| E. Turner & Sons, Cardiff | 1,875 |

**Glasgow.**—For the plasterers' work and tilers' work respectively of nurses' homes and pathological laboratory, to be erected at Woodilee Asylum, Lenzie, for the Glasgow District Lunacy Board:—

Plasterwork.

| | | | |
|---|---|---|---|
| J. MacQuarrie | £2,720 | 11 | 3 |
| R. A. MacGilvray & Ferris | 1,754 | 19 | 0 |
| A. Somerville | 1,628 | 17 | 6 |
| G. Rome & Co. | 1,610 | 0 | 0 |
| D. & J. MacKenzie | 1,538 | 8 | 4 |
| J. & A. Williamson | 1,501 | 19 | 4 |
| J. Forbes | 1,500 | 0 | 0 |
| J. MacKenzie,* 51, Jane Street, Glasgow | 1,351 | 1 | 8 |

Tile work.

| | | | |
|---|---|---|---|
| Galbraith & Winton | £379 | 14 | 4 |
| Kean & Wardrop | 365 | 16 | 10 |
| T. Wallace & Co. | 361 | 9 | 10 |
| J. Youden & Co., Ltd. | 352 | 11 | 1 |
| Porcelain Tile Co. | 332 | 16 | 8 |
| Haddaw, Forbes & Co. | 331 | 0 | 2 |
| Field & Allan | 321 | 16 | 7 |
| Cherry & Co., Ltd. | 283 | 18 | 11 |
| A. Wilson & Co.,* 229, St. Vincent Street, Glasgow | 287 | 10 | 8 |

* Accepted.

**Goldthorpe (Yorks).**—For the erection of a new boys' school and caretaker's house at Goldthorpe, for the Bolton-upon-Dearne School Board. Messrs. R. Higginbottom, Thurnscoe, Rotherham, and W. H. Wagstaff, architects, Saltergate, Chesterfield:—

| | | | |
|---|---|---|---|
| W. R. Unwin, Sheffield | £5,330 | 6 | 6 |
| Jones Brothers, Stairfoot | 4,880 | 0 | 0 |
| D. Gill & Son, Doncaster | 4,747 | 0 | 0 |
| W. Thornton & Sons,* Rotherham | 4,274 | 0 | 0 |
| A. Owram, Barnsley | 4,051 | 0 | 0 |

* Accepted.

**Ilford.**—For alterations at the White Horse public-house, Broadway, Ilford, for Mr. W. D. Golding. Mr. J. M. H. Gladwell, architect, Essex House, High Street, Stratford. Quantities by Mr. L. E. G. Collins, 31, Great St. Helen's, E.C.:—

| | | | |
|---|---|---|---|
| Todd & Newman | £2,657 | J. Maddison | £2,526 |
| Harris & Wardrop | 2,549 | J. & H. Cocks, Ltd. | 2,516 |

**London.**—For the erection of fire-resisting works, alterations, &c., at the Fountain Hospital, for the Metropolitan Asylums Board:—

| | |
|---|---|
| J. Ferguson & Co., Holborn, W.C. | £15,300 |
| W. Lawrence & Son, Waltham Cross, N. | 14,392 |
| H. Wall & Co., Kentish Town | 14,049 |
| F. & H. F. Higgs, Loughborough Junction, S.E. | 13,800 |
| W. Johnson & Co., Ltd., Wandsworth Common, S.W. | 13,450 |
| E. Chamberlain, Addlestone | 13,050 |
| C. B. Roberts & Co.,* Redhill | 12,950 |

* Accepted. [Architect's estimate, £15,400.]

**London, N.**—For the erection of new staircases and entrance, with other alterations, decorations and repairs, at the Welsh Congregational Church, King's Cross. Mr. Alfred Conder, architect, Palace Chambers, Westminster:—

| | | | |
|---|---|---|---|
| H. Young | £3,787 | Lascelles & Co. | £3,2[illegible]2 |
| L. H. & R. Roberts | 3,539 | Grover & Son* | 2,974 |

* Accepted.

**London, W.**—For gas-driven sewage pumping plant, compressors, and electric lighting sets, for the Chiswick Urban District Council. Messrs. Swinburne, Cooper & Baillie, consulting engineers, 82, Victoria Street, S.W.:—

| | | | |
|---|---|---|---|
| Bilbie, Hobson & Co. | £6,500 | 0 | 0 |
| J. & H. Gwynne, Ltd. | 5,305 | 0 | 0 |
| Tangyes, Ltd. | 4,470 | 0 | 0 |
| J. Wolstenholme & Son | 3,562 | 10 | 0 |
| Gwynne & Co. | 3,527 | 0 | 0 |
| Campbell Gas-Engine Co., Ltd. | 3,513 | 7 | 6 |
| Crossley Brothers, Ltd. | 3,304 | 0 | 0 |

**Epsom.**—For the erection of a new depôt, comprising cartshed, stables, horsekeeper's quarters, lofts, and storehouses, and for a post-mortem room at their property in Church Street, also for stables and barn at their sewage farm in Hook Road, for the Epsom Urban District Council. Mr. Edward R. Capon, surveyor:—

| | New depôt. | Post-mortem room. | Farm buildings. |
|---|---|---|---|
| W. Roberts, Croydon | £4,579 | £559 0 0 | £879 0 0 |
| Higgs & Outhwaite, Cobham | 4,250 | 498 0 0 | 668 0 0 |
| Cropley Brothers, Epsom | 4,094 | 533 0 0 | 612 0 0 |
| R. Wood, Guildford | 3,900 | 500 0 0 | 590 0 0 |
| M. G. King, Teddington | 3,923 | 525 6 6 | 531 10 11* |
| Rowland Brothers, Horsham | 3,904 | 490 0 0 | 578 0 0 |
| Foster Brothers, Norwood Junction | 3,887 | 524 0 0 | 564 0 0 |
| W. Akers & Co., South Norwood | 3,837 | 494 0 0 | 579 0 0 |
| C. Jackson, Croydon | 3,745 | 499 0 0 | 572 0 0 |
| J. Ferguson & Co., Holborn, W.C. | 3,700 | 506 0 0 | 613 0 0 |
| R. Atkinson, Kingston | 3,700 | 533 0 0 | 540 0 0 |
| Roll & Taylor, Epsom | 3,650 | 465 0 0* | 545 0 0 |
| J. Willmott & Son, Hornsey, N. | 3,636 | 505 0 0 | 580 0 0 |
| R. Jones & Son, Sutton | 3,620 | 470 0 0 | 550 0 0 |
| D. Stewart & Son, Wallington | 3,608 | 470 0 0 | 562 0 0 |
| F. J. Shopland, Sutton | 3,589 | 467 0 0 | 547 8 0 |
| W. Smith & Sons, Croydon | 3,550* | 475 0 0 | 543 0 0 |
| * Accepted. [Surveyor's estimate, | 4,2[illegible]6 | 426 0 0 | 550 0 0.] |

| | | | |
|---|---|---|---|
| Pollock, Whyte & Waddel | £3,202 | 0 | 0 |
| Sir Hiram Maxim Electrical Engineering Co.* | 3,197 | 2 | 0 |
| D. Stewart & Co. (1902), Ltd. | 2,772 | 0 | 0 |
| Drysdale & Co. | 1,930 | 0 | 0 |

* Accepted.

**London, E.C.**—For the foundations of Clerkenwell Police Court. Mr. J. Dixon Butler, architect and surveyor to the Metropolitan Police. Quantities by Messrs. Thurgood, Son & Chidgey, Charing Cross Chambers, Duke Street, Adelphi, W.C.:—

| | | | |
|---|---|---|---|
| Barker | £3,064 | Lathey Brothers | £2,600 |
| Holloway Brothers | 2,748 | Lawrance & Sons | 2,563 |
| Greenwood, Ltd. | 2,688 | Ashby & Horner | 2,549 |
| Mowlem & Co. | 2,665 | H. J. Williams | 2,517 |
| Holliday & Greenwood | 2,635 | F. & H. F. Higgs | 2,510 |
| Lascelles & Co. | 2,627 | Shurmur & Sons | 2,480 |
| Colls & Son | 2,619 | Clark & Bracey | 2,420 |
| Leslie & Co. | 2,600 | Grover & Sons | 2,399 |

**Lyndhurst.**—For carrying out works of drainage, for the New Forest Rural District Council. Tenders selected for consideration:—

| | | | |
|---|---|---|---|
| G. F. Westmoreland, Daventry | £9,307 | 10 | 0 |
| S. Wood, Bristol | 8,839 | 19 | 7 |
| J. W. Dean, Margate | 8,612 | 14 | 10 |

**Mansfield.**—For the construction of sewage-disposal works at Pleasley Hill, Mansfield, for the Town Council. Mr. R. Frank Vallance, borough surveyor:—

| | | | |
|---|---|---|---|
| J. H. Vickers, Ltd., Nottingham | £4,375 | 0 | 6 |
| J. Byrom, Bury | 4,237 | 10 | 0 |
| J. Bradley | 3,735 | 0 | 0 |
| J. Greenwood | 3,697 | 0 | 0 |
| H. Ashley | 3,593 | 0 | 0 |
| Firth & Co., York | 3,555 | 5 | 0 |
| W. R. Unwin, Sheffield | 3,488 | 13 | 0 |
| Lane Brothers* | 3,379 | 16 | 0 |

* Accepted. [Rest of Mansfield.]

**Sidbury (Salop).**—For the erection of a house for the Rev. J. B. Clutterbuck. Messrs. Barrett & Driver, architects, 23, York Place, Baker Street, W.:—

| | |
|---|---|
| Henry Wilcock & Co., Wolverhampton | £2,450 |
| T. Morris & Sons, Shrewsbury | 2,280 |
| Henry Smith, Wolverley, Kidderminster | 2,144 |
| A. Estcourt & Sons,* Gloucester | 2,100 |

* Recommended for acceptance.

**Tooting.**—For the erection of fire-resisting works at the Fountain Hospital, Tooting, for the Metropolitan Asylums Board. Messrs. T. W. Aldwinckle & Son, architects. Quantities supplied:—

| | |
|---|---|
| J. Ferguson & Co. | £15,300 |
| W. Lawrence & Son | 14,392 |
| H. Wall & Co. | 14,049 |
| F. & H. F. Higgs | 13,800 |
| W. Johnson & Co., Ltd. | 13,450 |
| E. Chamberlain | 13,050 |
| C. B. Roberts & Co.* | 12,950 |

* Accepted.

**Upton-on-Severn.**—For the erection of a new isolation hospital near Upton-on-Severn, in the county of Worcester for the Upton-on-Severn Rural District Council. Messrs. Lewis Sheppard & Son, architects, 51, Foregate Street, Worcester:—

| | |
|---|---|
| W. P. Lewis & Co., Hereford | £7,650 |
| Bromage & Evans, Worcester | 7,550 |
| Panter & Sons, Pershore | 7,248 |
| T. Broad, Ltd., Malvern | 6,697 |
| Collins & Godfrey, Tewkesbury | 6,688 |
| W. Sapcote & Sons, Birmingham | 6,348 |
| J. Wood & Sons, Worcester | 6,172 |
| E. Giles & Son, Birmingham | 6,155 |
| W. Hopkins, Birmingham | 6,100 |
| H. A. Brazier,* Bromsgrove | 6,000 |

* Conditionally accepted.

**Whickham (Durham).**—For the erection of council offices, &c., at Whickham, for the Whickham Urban District Council. Mr. J. B. Renton, surveyor, Whickham:—

| | | |
|---|---|---|
| W. B. Collin, Whickham | £4,500 | 0 |
| I. Bewley, Dunston-on-Tyne | 4,466 | 0 |
| J. A. M. Henderson, Jarrow | 4,077 | 0 |
| J. W. Turner & Co.,* Bensham Road, Gateshead | 3,883 | 16 |
| D. D. Hall, Gateshead | 3,599 | 0 |

* Accepted. [Surveyor's estimate, £4,000.]

**Wilton (Wilts).**—For supplying and laying about 2½ miles of cast-iron and stoneware pipe sewers, 1,895yds. of pumping main, and constructing pumping station, manholes, flushing tanks, ventilating shafts, the preparation of ten acres of land, and all works incidental thereto, for the Wilton Rural District Council. Messrs. Lemon & Blizard, MM.I.C.E., engineers, 38, Silver Street, Salisbury:—

| | |
|---|---|
| R. H. B. Neal, Plymouth | £13,236 |
| J. C. Trueman, Swanley | 12,400 |
| Wort & Way, Salisbury | 12,204 |
| Jesty & Baker, Portland | 12,056 |
| S. Wood, Bristol | 11,935 |
| Cooke & Co., Westminster | 11,890 |
| F. W. Trimm, Dorking | 11,839 |
| G. Bell, Tottenham | 10,859 |
| A. G. Osenton, Reading | 10,819 |
| M. Bridgman, Paignton | 10,535 |
| J. Riley,* Cheltenham | 10,097 |
| Tryhorn & Son, Salisbury | 9,119 |
| Webb & Co., Salisbury | 8,797 |

* Accepted. [Engineer's estimate, £10,826.]

**Bideford.**—For the erection of Municipal Buildings and Free Library, for the Town Council. Mr. Smith, architect:—

| | | |
|---|---|---|
| H. A. Forse & Son, Bristol | £9,195 | 0 |
| Woolway & Son, Barnstaple | 9,150 | 0 |
| Jacob, Lond & Son, Bath | 7,999 | 0 |
| Mayward Winter, Bath | 7,857 | 0 |
| Smith & Pitts, Birmingham | 7,560 | 0 |
| Collins & Godfrey, Tewkesbury | 7,156 | 0 |
| Westcott, Austin & White, Exeter | 6,700 | 0 |
| E. Ellis & Son, Bideford | 6,300 | 0 |
| H. Glover, Bideford | 6,215 | 10 |

[Architect's estimate, £6,000.]

## Appointments Wanted.

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ARCHITECT'S JUNIOR ASSISTANT desires re-engagement. Accurate draughtsman and tracer, working drawings, levelling, and surveying. Good references.—H. A., 2, Rosebery Terrace, Crouch End, N.

ARCHITECTURAL ASSISTANT desires RE-ENGAGEMENT. Over five years' good and varied experience (three years' articles). Working drawings, details, surveying, &c.—Apply, S. C. A., 56, Great Freeman Street, Nottingham.

ARCHITECTURAL ASSISTANT desires SITUATION. 14 years' all-round experience. Working drawings, details, specifications, also hospital and asylum work. Good references.—C. T., 80, Mordaunt Road, Harlesden, N.W.

ARCHITECT'S ASSISTANT requires ENGAGEMENT. Aged 34. Experienced and reliable.—E. THORNILEY, 14, Worwood Street, London, E.C.

ARCHITECT'S ASSISTANT (27) desires ENGAGEMENT. Nine years' good experience. Working drawings, details, specifications, knowledge of quantities, surveys. Salary moderate.—P., 25, Vicarage Drive, Eastbourne.

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CLERK OF WORKS DISENGAGED. Energetic and reliable. Town or country.—A D., St. Kilda, Adelaide Road, Brockley, S E.

CLERK OF WORKS wants ENGAGEMENT. Experienced and practical Highest references. Town or country. C. W., 13, Compton Street, Canonbury, N.

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## Miscellaneous.

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LONDON ADDRESS Wanted at an Architect's office for letters, &c. Inns of Court, Oxford Circus, or Westminster preferred.—J. CROSSLAND, Consulting Landscape Gardener, Broughton-in-Furness Lancashire.

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WANTED immediately, about 2,000 yards cube Clinker or Locomotive Ashes, suitable for filter beds, on rail or delivered to Frimley Station, L. and S. Rly.—L. WHITEHEAD & Co., Ltd., Portland Place North, Clapham Road, London, S.W.

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SEE PAGE xvii

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# THE BUILDERS' JOURNAL.

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OFFICE HOURS:—9.0 to 6.0 (Saturday 9.0 to 1.0). *Manager*—JOHN B. THORP.

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| | | |
|---|---|---|
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## TO CONTRIBUTORS.

THE EDITOR will be pleased to consider any articles, illustrated or otherwise, dealing with old and new buildings, methods of construction, or other matter of an architectural character. He will also be glad to consider architectural photographs and sketches (the latter preferably in black and white) and measured drawings of work in this country or abroad. News items of interest to architects and builders will also be considered, provided the name and address of the sender are given; no notice will be taken of anonymous contributions. All communications should be addressed to the Editor of THE BUILDERS' JOURNAL, 9, East Harding Street, E.C.

## ANNOUNCEMENT.

SPECIAL PROMINENCE IS GIVEN TO ADVERTISEMENTS OF—

**Contracts Open.**

**Competitions Open.**

**Educational Announcements.**

**Partnerships and Investments.**

**Businesses Wanted and for Sale.**

**Offices Wanted and to Let.**

**Drawings, Tracings, &c.**

**Property and Land Sales.**

**Appointments Wanted and Vacant.**

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ALL TECHNICAL EXAMINATIONS.—First place in every open competition during last two years. Correspondence or Resident Tuition. Vacancy for Articled Pupil.—G. A. T. MIDDLETON, 19, Craven Street, W.C.

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R.I.B.A. EXAMS.—Personal and Correspondence tuition; courses of any duration. Apply for syllabus to Mr. A. G. BOND, B.A.Oxon., A.R.I.B.A., 115, Gower Street, London, W.C. (late Howgate and Bond).

STRUCTURAL STEELWORK.—Structural Engineer resident in London receives evening pupils for theory and practice of design of roof, girder, and bridge work, and undertakes the designing of all types of structures.—Address, Box 2554, BUILDERS' JOURNAL Office, 9, East Harding Street, E.C.

### THE SOCIETY OF ARCHITECTS.

FOUNDED 1884. INCORPORATED 1893.

The next ENTRANCE EXAMINATION will be held in LONDON and certain PROVINCIAL CENTRES on OCTOBER 6th, 7th, and 8th, 1903.

SYLLABUS post free, or on application to THE SECRETARY of THE SOCIETY OF ARCHITECTS, St. James's Hall, Piccadilly, London, W.

### KING'S COLLEGE, LONDON.

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The Course of Systematic Instruction in Building Construction, the General Duties of Sanitary Inspectors, and Chemistry and Physics in Relation to Sanitary Science, will commence SEPTEMBER 28th.

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QUANTITIES, and the
HISTORY of ARCHITECTURE;
also the ARCHITECTURAL STUDIO
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### BATTERSEA POLYTECHNIC, S.W.

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In BUILDING, ARCHITECTURAL, and CONSTRUCTIONAL WORK, including Preparation for R.I.B.A. and other Professional Examinations.

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In all Science and Technical Subjects for Mechanical, Electrical, and Municipal Engineering, Architectural and Building Work, including Motor Car Engineering, Builders' Quantities, Sanitary Science, and Chemistry for Builders.

Prospectus gratis on application to the Secretary.

## EDUCATIONAL—*(continued)*.

### CITY OF LIVERPOOL.

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APPLIED ART,
THE UNIVERSITY OF LIVERPOOL.

TENTH SESSION, 1903-1904, COMMENCES MONDAY, 21st SEPTEMBER.

In ARCHITECTURE two courses of Preliminary Training are open to Students—(a) Two Years' Certificate Course; (b) Three Years' Degree Course (B.A. Honours in Architecture). Classes, Elementary and Advanced, are also held in the Day and Evening for Architectural Assistants and others.

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Three Free Studentships are offered to the Day Classes.

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For further particulars apply to W. EDNEY PETERS, Secretary, School of Architecture and Applied Art, The University.

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EVENING CLASSES
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BUILDING CONSTRUCTION AND WORKING
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QUANTITY SURVEYING.
Arranged by the Help of the Carpenters' Company.
Under the direction of Professor F. M. SIMPSON, F.R.I.B.A.

Two Classes (Elementary and Advanced) in Building Construction and Drawing will be conducted by Mr. A. BUCHANAN, beginning on THURSDAY, OCTOBER 8th. Fee for either class, 10s. 6d.

Professor SIMPSON will give some lectures on Designing in Material.

Two Classes (Elementary and Advanced) in Quantity Surveying will be held by Mr. EDMUND J. BURR, beginning on TUESDAY, OCTOBER 13th.

Fee for either Class, 10s. 6d.

For particulars of the Evening Classes and of the new Day School of Architecture, apply to

T. GREGORY FOSTER,
Secretary.

## Property and Land Sales.

*The charge for Advertisements under this heading is 2s. per insertion not exceeding four lines, and 6d. per line after.*

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For Specimens, see Supplements to *The Builders' Journal.*
VULCAN HOUSE, 56, LUDGATE HILL. WORKS: FOREST HILL, S.E.

## See Page xvii for EMPLOYMENT REGISTER.

## Contracts Open—*(Continued from page lv).*

E. R.

### TO BUILDERS AND CONTRACTORS.

TENDERS for the ERECTION of a NEW COASTGUARD STATION, consisting of houses for an officer and seven men, at Fairlight, near Hastings, in the County of Sussex, will be received at this office before NOON on the 18th SEPTEMBER, 1903.

Copies of the Bill of Quantities will be supplied on application to this office, and the drawings and specification can be seen here, or at the Watch Room, Fairlight Coastguard Station.

DIRECTOR OF WORKS DEPARTMENT,
ADMIRALTY,
No. 21, Northumberland Avenue,
London,
W.C.

### TO BUILDERS AND CONTRACTORS.

TENDERS for the ERECTION of NEW COASTGUARD BUILDINGS, at Telegraph, St. Mary's, Isles of Scilly, consisting of houses for four men, officer's room, telescope house, &c., will be received at this office before NOON on 2nd OCTOBER, 1903.

Copies of the drawings and specification can be seen at this office; at the Coastguard Station, St. Mary's, Scilly; at the Coastguard Station, Penzance; and at the office of the Superintending Civil Engineer, H.M. Dockyard, Devonport.

Bills of Quantities can be obtained on application to the Superintending Civil Engineer, H.M. Dockyard, Devonport.

DIRECTOR OF WORKS DEPARTMENT,
ADMIRALTY,
Avenue House,
Northumberland Avenue,
London,
W.C

### RUGBY URBAN DISTRICT COUNCIL.

TO CONTRACTORS.

The above Urban District Council invite TENDERS for the following Works:—

(*a*) The ERECTION and completion of THREE COTTAGES at Brownsover Mill, Rugby.

(*b*) The CONSTRUCTION of PARK ROAD (a length of about 330 yards), from the end of the present roadway to North Street.

The Plans relating to the above Works can be seen at the Office of the undersigned, where also copies of the Specification, Bill of Quantities, and Forms of Tender can be obtained by intending Contractors on payment of One Guinea, which sum will be returned on the receipt of a bona fide Tender.

Tenders on the forms supplied, and endorsed "Cottages" or "Park Road," as the case may be, to be sent to T. M. WRATISLAW, Esq., Clerk to the Council, High Street, Rugby, on or before the 21st inst.

The Council do not bind themselves to accept the lowest or any Tender.

By Order,
D. G. MACDONALD, Assoc. M. Inst. C.E.,
Surveyor to the Council.
Rugby, 2nd September, 1903.

**Established 40 Years.**
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## Contracts Open—*(Continued).*

### BARRY URBAN DISTRICT COUNCIL.

TO BUILDERS.

TENDERS are invited for the ERECTION of a CENTRAL PUBLIC LIBRARY, Holton Road, Barry, in accordance with designs prepared by Messrs. C. E. HUTCHINSON & E. HARDING PAYNE, Architects, 11, John Street Bedford Row, London, W.C.

Builders prepared to Tender are asked to send their names to the undersigned on or before the 14th SEPTEMBER, 1903.

Plans, specifications, and form of contract may be seen, and forms of Tender and amended bills of quantities obtained, on or after the 18th SEPTEMBER, 1903, at the Offices of the Architects or the Council, on payment of two guineas (to be returned to parties sending a bonâ-fide Tender).

Sealed Tenders, endorsed "Central Library," to be delivered to the undersigned not later than TWELVE Noon on the 2nd OCTOBER, 1903.

The Council does not bind itself to accept the lowest or any Tender.

Council Offices, T. B. TORDOFF,
Barry (Glam.). Clerk.

## Competition Open.

### BOROUGH OF HARROGATE.

TO IRONFOUNDERS AND OTHERS.

The Harrogate Corporation invite COMPETITIVE DESIGNS and TENDERS for a NEW IRON and GLASS PUMP ROOM and COLONNADE in the Valley Gardens.

The Designs and Tenders are to be delivered to the undersigned not later than MONDAY, OCTOBER 26 1903.

Full particulars, together with a plan of the pump room and site, may be obtained after September 14, on payment of cheque for £1, which amount will be refunded to competitors.

F. BAGSHAW.
Borough Engineer.

Municipal Offices,
Harrogate,
September 3, 1903.

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The WANT Advertisements
On Pages xiv & xv.

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Showing Clearly How to Keep all the Account Books Used in the Office of a Builder and Contractor. Post free 1s. 2d.
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# BUILDERS' JOURNAL EMPLOYMENT REGISTER.

We inaugurate this week a new and original feature, which we trust will still further add to the usefulness of this Journal. It is our constant endeavour to make THE BUILDERS' JOURNAL more helpful to the constructive professions and trades. Regular subscribers will remember we have of recent years introduced various features, such as our Enquiries Columns, Lists of Bankruptcies, Current Prices, New Companies, Contracts and Competitions Open, all with the object of advancing the material welfare of our readers.

We are sure that this present scheme will supply a long recognised need, and will bring together Employer and Employed, to their mutual advantage, thus still further adding to the interest and benefits of THE BUILDERS' JOURNAL.

**The Employer.**—In the building trades there must necessarily be "mobility of labour," and when a rush of work comes an employer suddenly finds himself in urgent need of employees. Our scheme is designed to assist him by extending his means of supply and making it more quickly available.

**The Employee,** by the same means, will not be kept so long out of employment. He cannot afford to regularly advertise. After the week in which his advertisement appears it is lost for ever. By our new scheme we sustain these advertisements for six weeks.

We have opened a **Register of Appointments Wanted,** with the double object of aiding both Employer and Employed to closer intercommunication. The particulars of all advertisers who take three insertions in our "Appointments Wanted" columns will be kept on this Register for six weeks without extra charge, *i.e.*, for 3/- we will give three insertions of any "Wanted" advertisement (four lines), and also six insertions in the "Employment Register."

## THUS FOR 3/- WE WILL ADVERTISE YOU FOR SIX WEEKS.

**Instructions.**—The Employment Register will be classified in trades. All advertisers who desire to avail themselves of the advantages of this Register must furnish their names and full addresses, which will not be published, but a number will be assigned to each for identification. All communications will be treated in the strictest confidence. Employers should address letters to the numbers, and their letters will be immediately forwarded to the advertisers.

The following abbreviations are employed in the Register:—s., salary required; ex., experience; refs., references; yrs., years.

### ACCOUNTANT.

1. LONDON, W.—Accountant, wide ex., will open & keep builders' books.

### ARCHITECTS' ASSISTANTS.

2. CROUCH END, N.—Junior Assistant, good refs., accurate draughtsman, levelling, surveying.
3. HALTWHISTLE.—Junior Assistant, student R.I.B.A.
4. HULL.—Assistant, age 22. 6 yrs. ex. 25/ salary. Quantities, abstracting and billing. Specifications, surveying, &c.
5. NOTTINGHAM.—Architectural Assistant. 5 yrs. ex. (3 yrs. articles). Working drawings, details, surveying, &c.
6. HARLESDEN, N.W.—Architectural Assistant. 14 yrs ex. Good refs. Working drawings, details, specifications. Hospital and asylum work.
7. LONDON, E.C.—Architect's Assistant. Age 34. Experienced and reliable.
8. EASTBOURNE.—Architect's Assistant. Age 27. 9 yrs. ex. Moderate s. Working drawings, details. Specifications, quantities, surveys.

### CARPENTERS & JOINERS.

9. LONDON, N.—Stair & Rail Hand, good refs., hour or piecework.
10. GRAVESEND.—Carpenter & Joiner, age 31, 14 yrs. ex., excellent refs., moderate s., abstainer, seeks working managership.

### CLERK.

11. WORTHING.—Builder & Decorator's or Contractor's Clerk. Age 22. Excellent refs. Moderate s. Certificated. P.C. jobbing accounts, tracing, office routine.

### CLERKS OF WORKS.

12. YORK.—Clerk of Works, long varied ex., good refs. Structural steelwork, concrete, brick or stone.
13. WEST NORWOOD.—Clerk of Works. Age 45. First-class refs. Thoroughly practical. Just finished large job in London.
14. BROCKLEY, S.E.—Clerk of Works. Energetic and reliable. Town or country.
15. CANONBURY, N.—Clerk of Works. Highest refs Experienced and practical. Town or country.

### DESIGNERS, TRACINGS, &c.

16. LANCASTER.—Designer for Stained Glass. Additional work wanted. Quaint, up-to-date treatmen for leaded lights. Competition sketches prepared
17. HENDON.—Plans prepared at lowest charges. Tracings from 5s. Specifications, &c. accurately typewritten, 1s. per 1,000 words.
18. LONDON, W.C.—Experienced Surveyor. Quantities, working and detail drawings. Specifications pre-prepared. Terms arranged.

(Continued on next page.)

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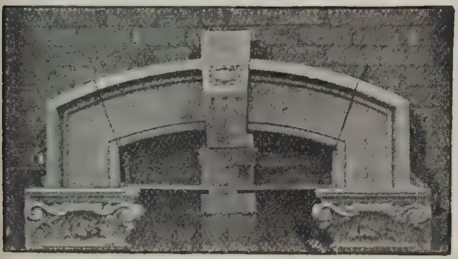
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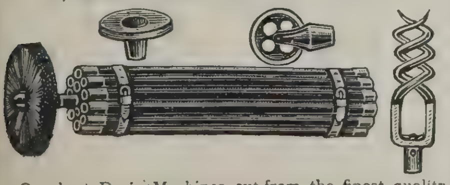

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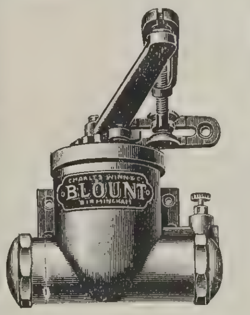

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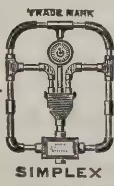

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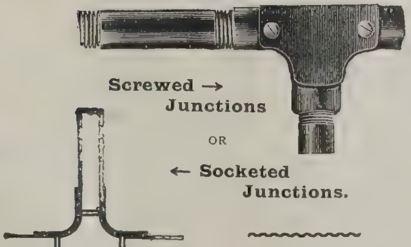

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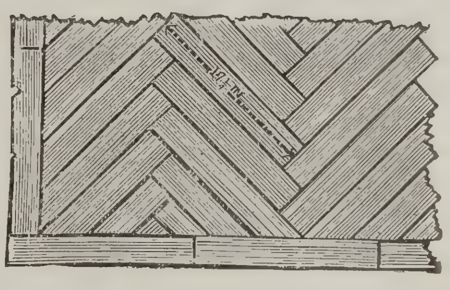

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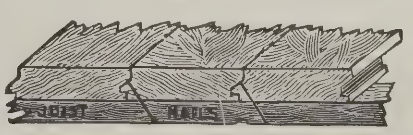

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## BUILDERS' JOURNAL EMPLOYMENT REGISTER.

*(Continued.)*

### ENGINE DRIVERS.

19. HAMMERSMITH.—Driver, 7 yrs. workshop ex., highest refs.

### FOREMEN.

20. CATFORD, S.E.—Working General Foreman, thoroughly ex., good refs., carpntr. & joiner by trade.
21. AYLESBURY, BUCKS.—General Foreman, age 32, undeniable refs., good manager.
22. MARKET LAVINGTON, WILTS.—General Foreman, age 47, thoroughly ex., refs., carpenter by trade.

### MASONS.

23. FRINTON-ON-SEA, ESSEX.—Good Mason, refs, abstainer, good draughtsman. Can set out.

### PLUMBERS & FITTERS.

24. NORBITON.—Plumber & Fitter, good refs., wants piecework, own plant.

3/-
Will pay for a
four-line
"Want" Advertisement
for
6 WEEKS.
See previous page.

## Bankruptcies.

[Abbreviations: R.O.—receiving order; P.E.—public examination; C.C.—county court; O.R.—official receiver; Adj.—Adjudication.]

DURING THE WEEK ending September 12th four failures in the building and timber trades in England and Wales were gazetted.

F. WARD, builder Leeds. R.O. September 4th.

G. EMERY, builder, Aston. Liabilities £1,055; assets £186.

M. REEVES, painter, Aston. Liabilities £110; assets £10.

R. DAVIES, builder, Conway. Gross liabilities £3,410; assets £168.

F. B. DOBSON, builder, South Shields. R.O. September 4th. P.E., Newcastle-on-Tyne C.C., October 8th, at 11.

E. WARD & Co., plumbers and electricians, Southampton. R.O. and adj. September 3rd.

D. COHEN, glazier and contractor, Manchester. R.O. and adj. August 31st.

W. H. SHOPLIND, carpenter and builder, Blaenavon. R.O. and adj. August 31st.

J. GLANVILLE, plumber and contractor, Plymouth. P.E., Town Hall, East Stonehouse, October 5th, at 12.

A. W. GREEN, builder, Wokingham. First meeting, Queen's Hotel, Reading, October 1st, at 12. P.E., Reading Assize Courts, same day, at 2.

F. W. REAVELL builder and contractor Knaphill and Farnborough. Gross liabilities £1,809; £1,680 unsecured; assets £830; deficiency £854.

J. HOWARD, builders' merchant. Kingsland Road, London, N. Gross liabilities £18,961; £11,749 expected to rank for dividend; assets £5,655.

J. W. SMITH, building contractor, Shirlev, Birmingham. Gross liabilities £4.852; £4,643 expected to rank for dividend; assets £1.164; deficiency £3,478

A. A. ROSE, builder, Bournemouth. Gross liabilities £987; £446 expected to rank; assets £2,2; deficiency £214.

W. P. LLOYD, builder. Hereford. Liabilities £213; £188 expected to rank for dividend; assets £134; deficiency £33.

MONTAGUE & FANCY, builders, Upper Parkstone. Adj. September 4th. P.E., Poole Town Hall, September 30th, at 11.30.

## New Companies.

GRAYS LAND CO. LTD., to acquire and lay-out land for building purposes, &c. Capital: £250 in £15 shares.

NEWCASTLE GRANITE AND WHINSTONE CO., LTD. quarry owners, &c., Shieldfield Lane, Newcastle-on-Tyne. Capital: £10,000 in £1 shares.

EZARD, LTD., builders, contractors, sanitary engineers, decorators, &c., 53, Phillips Park Road, Beswick, Manchester. Capital: £1,000 in £1 shares (500 preference).

WESTERN PIGMENT CO., LTD., paint manufacturers and dealers, &c., Beech Avenue, Plymouth. Capital: £50 in £1 shares.

SOUTH AFRICAN (INCANDESCENT) LIGHTING CO., LTD., to develop a certain invention for improvements in gas or oil system of incandescent lighting. Capital: £100,000 in £1 shares

LIPHOOK SANITATION CO., LTD., to acquire vans, carts, horses, pumps, &c., for disposing of slop, sink water and sewage, &c., Station Road, Petersfield, Hants. Capital: £500 in £1 shares.

HAFOD ABLEY BRICK CO., LTD., manufacturers of bricks, tiles, pipes, terra-cotta, &c., 9, Regent Street, S.W. Capital: £10.000 in 9,980 seven per cent. cumulative preference shares of £1 each and 800 ordinary shares of 6d. each.

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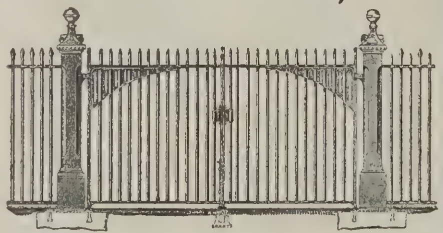
BLIND LATHS
GO TO
R. BELL & CO. LTD. BROMLEY-BY-BOW.
ESTD. LONDON 1832

ROOFING SLATES:
Velinheli, Penrhyn, and Westmoreland.
SLATE SLAB GOODS:
Both Plain and Enamelled.
ALFRED CARTER & CO., LIVERPOOL.

BAYLISS, JONES & BAYLISS
WOLVERHAMPTON. LTD
LONDON SHOW ROOMS:-
139 & 141 CANNON ST. E.C.
CATALOGUES FREE.
Manufacturers of GATES,
IRON
RAILING,
TREE GUARDS, &c.
HURDLES,



(5)

Hot & Cold Water Tap
INVENTED BY
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NO PACKING
NO WASHERS
NO LEAKAGE
NEW IMPROVEMENTS
GUARANTEED FOR 3 YEARS
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. . . MANUFACTURERS OF . . .
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*Semi-Encaustic Paving Tiles,*
ORNAMENTAL RIDGES AND FINIALS,
Staffordshire Quarries, Roofing Tiles, &c.

ESTABLISHED 1870.
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FOR ALL CLIMATES.
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WILLESDEN PAPER & CANVAS WORKS, Ld., Willesden Junction, N.W.

THE

# BUILDERS' JOURNAL

AND ARCHITECTURAL RECORD.

September 23, 1903. Vol. 18, No. 450. 9, East Harding Street, E.C.

**Building Imports and Exports.** ONLY two months and a half were allowed the Board of Trade officials to compile the blue-book which has been awaited with such impatience. Its 500 pages are crammed with figures relating to British and foreign trade, and it is no easy thing to grasp their meaning. On reference to the next page it will be seen that we have endeavoured to pick out from the mass of figures those which relate to the building and allied trades. Thus gathered together they form an imposing array. We need hardly emphasize their importance. Yet even when tabulated in this manner it is difficult to thoroughly understand them. It will be helpful therefore to point out the main indications of these formidable figures. Consider the exports first. During the eleven years from 1892 to 1902 it will be seen that the export of bricks to foreign countries kept fairly steady, but there was a decided and continued increase to our colonies, the value being more than half as much again for 1902 as for 1892. The figures relating to cement are astonishing. They show how the trade to foreign countries fell away year after year, till in 1902 it was a sixth of what it had been in 1890; this is especially marked in the case of the United States, the trade with which in 1902 was not a fifteenth of what it had been in 1890; to the colonies the export was, comparatively speaking, regular: we would point out, however, that Australia, Natal and the Cape took £20,000 worth of cement from foreign countries in one year (1901). The exports of painters' colours and materials, both to foreign countries and to the colonies, increased substantially; but it will be noticed that there was a falling off in respect to Russia, Italy and the United States: it will also be noticed that £37,000 worth of these goods were taken by Australia and the Cape from foreign countries during 1900. Stones and slates show an increase to the colonies and a decrease to foreign countries; here again there has been a great loss of trade with America; the German trade has also dwindled away. ("Stones" are not particularized in the blue-book, and must consequently be regarded as including such as are used for lithography as well as those for building purposes.) The exports of wood, iron and steel manufactures have been well maintained, and as regards the latter there has been a largely increased trade with the colonies. Next let the imports be considered. In window glass there has been a steady increase from Germany, Belgium and Holland—especially Holland, whence imports have quadrupled during the years under review. Girders, beams and pillars are particularly important. The figures show that the imports from Belgium and Holland have greatly increased. Here we may give some supplementary figures obtained from another source. The following figures show the total quantities and value of bar, angle, bolt and rod iron, unwrought iron and steel, iron and steel girders, beams, joists and pillars imported into this country from Germany, Holland, Belgium and the United States during the four years 1899-1902 :—

| —— | Tons. | Value. |
|---|---|---|
| *Germany, Holland and Belgium :—* | | £ |
| 1899 - - | 99,942 | 667,528 |
| 1900 - - | 110,970 | 833,074 |
| 1901 - - | 289,605 | 1,816,862 |
| 1902 - - | 529,970 | 2,810,723 |
| *United States :—* | | |
| 1899 - - | 71,680 | 371,267 |
| 1900 - - | 172,105 | 1,135,061 |
| 1901 - - | 55,080 | 325,000 |
| 1902 - | 3,838 | 36,467 |

These figures speak for themselves. We may pass to the import of painters' colours. So far as Europe is concerned, there is nothing of special note, but the great increase from America will once more be observed—in 1902 it was almost four times as much as in 1890. Slates show a big increase from France and America; and here we would point out, as indicating how events alter trade, the immense quantities imported during 1897, 1898 and 1899, which increase was doubtless in large measure due to the Penrhyn strike. The figures relating to house frames and joiner's work show how much more we are now receiving from Belgium, France, Holland and America. Norway and Sweden, it will be noted, are not given. In the whole of the blue-book no reference to them is to be found. Yet as regards house frames and joiner's work especially the omission is grave, for everyone knows what fierce competition the imports from these two countries have created among home firms. Similarly, the imports by us from our colonies of such and similar goods are not given in the blue-book. We cannot understand why. Without them it is impossible to determine what trade we are doing with the colonies. From another report we have managed to gather the figures relating to Canada; but these by themselves, though interesting, are not sufficient to enable us to form a judgment concerning the proposed preferential tariffs of Mr. Chamberlain or the later retaliatory duties of Mr. Balfour. As regards the former, however, we would point out that Canada allows us to send goods into her dominions at half the duty imposed on Germany; thus, we have to pay $8\frac{1}{3}$ cents per 100lbs. of Portland cement, while the Germans pay $16\frac{2}{3}$ cents; for girders, beams, &c., $4\frac{2}{3}$ dollars per ton as against $9\frac{1}{3}$ dollars; or for white and red lead $3\frac{1}{3}$ per cent., as against $6\frac{2}{3}$ per cent. But to revert to the main figures. These, so far as the colonial exports of building materials to us are concerned, are very incomplete, and we would urge that the omissions be supplied in an additional report. Wallpaper should be kept distinct: at present the figures about "papers of all sorts" are useless to us: while those relating to the imports from France of "Glass, plate" are puzzling—is it plate glass or glass plate? Such ambiguity needs correction. "Stones" should also be separately stated.

Having briefly reviewed the figures, we may attempt to draw some conclusions from them. Take cement as an example. Let it be supposed that a Birmingham order for £10,000 is secured by a Belgian firm. Let it be supposed that with a tax on foreign cement the order would have gone to a Medway firm. From one standpoint it is emphasized that £10,000 would thus be in our own pockets instead of in the Belgians'. From another point it is argued that, though the Medway firm kept the money in their district, the Birmingham buyer had to pay more for the cement; and consequently—here taking cement as representing other building materials—his house cost more to build. Therefore he would charge a higher rent. And the workman who lived in the house would be the loser. But at this point it is pleaded, for preferential tariffs, that orders now passing from our colonies into foreign countries would come to us, in which case wages would increase, and thus the workman could afford to pay the higher rent. It would thus seem, theoretically, that things would be as they were before. But in practice no such equilibrium would exist. There would be a tendency one way or the other. Whether under preferential tariffs with our colonies the building trade would be better off is a question which can hardly be discussed at this juncture; more especially as the colonial export figures are not yet given us. But we are inclined to believe that with more money in the country, trade would be better all round. We must, however, leave this matter to the individual reflections of our readers, having already fulfilled our present purpose of explaining the figures given on the next two pages.

# THE GREAT BLUE-BOOK.

### COMPARATIVE TABLES RELATING TO THE BUILDING TRADES.

THE promised blue-book on British and foreign trade and industry, issued by the Board of Trade last week, contains a number of important figures relating to the building and allied trades. From these we have compiled the following comparative tables, which will doubtless be examined with interest. A critical review of them is given on the preceding page.

VALUE OF EXPORTS FROM THE UNITED KINGDOM OF ARTICLES MANUFACTURED AND PARTLY MANUFACTURED IN THE UNITED KINGDOM. THE VALUE IS F.O.B.

| — | 1890. | 1891. | 1892. | 1893. | 1894. | 1895. | 1896. | 1897. | 1898. | 1899. | 1900. | 1901. | 1902. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Bricks.* | £ | £ | £ | £ | £ | £ | £ | £ | £ | £ | £ | £ | £ |
| To all Foreign Countries | — | — | 167,000 | 152,000 | 116,000 | 148,000 | 170,000 | 174,000 | 176,000 | 220,000 | 211,000 | 161,000 | 141,000 |
| „ „ British Colonies* and Possessions | — | — | 31,000 | 38,000 | 29,000 | 30,000 | 33,000 | 36,000 | 44,000 | 45,000 | 47,000 | 50,000 | 55,000 |
| „ British India | — | — | 6,000 | 5,000 | 4,000 | 4,000 | 5,000 | 6,000 | 7,000 | 5,000 | 4,000 | 6,000 | 8,000 |
| „ Self-Governing Colonies | — | — | 17,000 | 19,000 | 15,000 | 20,000 | 20,000 | 19,000 | 27,000 | 30,000 | 28,000 | 32,000 | 35,000 |
| „ Other British Colonies & Possessions | — | — | 11,000 | 14,000 | 10,000 | 6,000 | 8,000 | 11,000 | 10,000 | 10,000 | 15,000 | 12,000 | 12,000 |
| „ Russia | — | — | 22,040 | 34,366 | 22,947 | 35,822 | 50,700 | 54,607 | 55,112 | 81,399 | 40,618 | 26,188 | 15,974 |
| „ United States | — | — | 31,756 | 30,024 | 14,689 | 18,601 | 14,145 | 16,239 | 15,300 | 18,593 | 25,726 | 26,017 | 27,277 |
| „ Germany, Belgium, Holland, France and Italy—None given. | | | | | | | | | | | | | |
| *Cement.* | | | | | | | | | | | | | |
| To all Foreign Countries | 876,000 | 697,000 | 573,000 | 493,000 | 443,000 | 371,000 | 315,000 | 359,000 | 264,000 | 311,000 | 276,000 | 188,000 | 147,000 |
| „ „ British Colonies and Possessions | 406,000 | 444,000 | 330,000 | 251,000 | 261,000 | 271,000 | 265,000 | 288,000 | 345,000 | 380,000 | 397,000 | 396,000 | 374,000 |
| „ British India | 50,000 | 51,000 | 46,000 | 35,000 | 28,000 | 32,000 | 31,000 | 33,000 | 39,000 | 56,000 | 52,000 | 51,000 | 41,000 |
| „ Self-Governing Colonies | 271,000 | 308,000 | 208,000 | 140,000 | 156,000 | 150,000 | 142,000 | 158,000 | 168,000 | 191,000 | 198,000 | 168,000 | 161,000 |
| „ Other British Colonies & Possessions | 85,000 | 85,000 | 76,000 | 76,000 | 77,000 | 89,000 | 92,000 | 97,000 | 138,000 | 133,000 | 147,000 | 177,000 | 172,000 |
| „ Russia | 15,745 | 9,142 | 8,213 | 9,697 | 11,170 | 3,347 | 7,649 | 8,240 | 10,741 | 6,608 | 1,775 | 1,768 | 303 |
| „ United States | 484,861 | 421,592 | 353,625 | 314,566 | 235,372 | 224,013 | 135,026 | 107,177 | 87,895 | 74,697 | 68,395 | 17,529 | 31,811 |
| „ Holland | 30,210 | 28,663 | 21,690 | 21,024 | 19,001 | 15,826 | 14,852 | 14,077 | 10,862 | 8,996 | 7,908 | 6,608 | 5,001 |
| „ France | 14,269 | 12,446 | 6,721 | 6,269 | 4,114 | 3,494 | 3,597 | 2,568 | 2,154 | 2,416 | 1,730 | 628 | 854 |
| „ Germany, Belgium and Italy—None given. | | | | | | | | | | | | | |
| *Electric Lighting Apparatus.* | | | | | | | | | | | | | |
| To all Foreign Countries | 187,000 | 134,000 | 87,000 | 102,000 | 126,000 | 179,000 | 174,000 | 238,000 | 267,000 | 242,000 | 222,000 | 180,000 | 195,000 |
| „ „ British Colonies and Possessions | 94,000 | 105,000 | 88,000 | 113,000 | 120,000 | 157,000 | 208,000 | 211,000 | 248,000 | 269,000 | 324,000 | 373,000 | 423,000 |
| „ British India | 13,000 | 25,000 | 9,000 | 13,000 | 23,000 | 27,000 | 30,000 | 36,000 | 42,000 | 45,000 | 60,000 | 85,000 | 106,000 |
| „ Self-Governing Colonies | 56,000 | 72,000 | 72,000 | 93,000 | 88,000 | 121,000 | 168,000 | 148,000 | 184,000 | 188,000 | 228,000 | 260,000 | 287,000 |
| „ Other Brit. Colonies and Possessions | 25,000 | 8,000 | 7,000 | 7,000 | 9,000 | 9,000 | 10,000 | 27,000 | 22,000 | 36,000 | 36,000 | 28,000 | 30,000 |
| „ Belgium | 3,775 | 2,939 | 2,862 | 16,939 | 14,492 | 17,234 | 23,123 | 22,360 | 19,174 | 27,957 | 33,843 | 19,951 | 6,050 |
| „ Russia | 11,264 | 5,315 | 3,647 | 8,519 | 20,117 | 20,672 | 13,186 | 23,844 | 68,237 | 58,494 | 11,131 | 6,141 | 6,265 |
| „ Germany, Holland, France, Italy and United States—None given. | | | | | | | | | | | | | |
| *Furniture.* | | | | | | | | | | | | | |
| To all Foreign Countries | 252,000 | 222,000 | 204,000 | 224,000 | 156,000 | 179,000 | 196,000 | 228,000 | 254,000 | 269,000 | 295,000 | 226,000 | 254,000 |
| „ „ British Colonies and Possessions | 397,000 | 370,000 | 329,000 | 297,000 | 263,000 | 338,000 | 400,000 | 401,000 | 359,000 | 306,000 | 341,000 | 408,000 | 652,000 |
| „ British India | 33,000 | 35,000 | 25,000 | 25,000 | 17,000 | 23,000 | 17,000 | 17,000 | 21,000 | 22,000 | 25,000 | 28,000 | 31,000 |
| „ Self-Governing Colonies | 324,000 | 293,000 | 248,000 | 223,000 | 197,000 | 264,000 | 334,000 | 333,000 | 293,000 | 232,000 | 262,000 | 329,000 | 565,000 |
| „ Other Brit. Colonies and Possessions | 40,000 | 42,000 | 56,000 | 45,000 | 49,000 | 51,000 | 49,000 | 51,000 | 45,000 | 52,000 | 54,000 | 51,000 | 56,000 |
| „ France | 40,057 | 51,052 | 42,663 | 27,667 | 14,086 | 14,408 | 21,994 | 38,179 | 41,767 | 38,315 | 63,723 | 15,297 | 16,302 |
| „ United States | 48,201 | 49,013 | 44,264 | 77,930 | 30,460 | 39,595 | 36,149 | 34,945 | 30,285 | 29,576 | 48,682 | 49,793 | 67,411 |
| „ Germany, Belgium, Holland, Russia and Italy—None given. | | | | | | | | | | | | | |
| *Painters' Colours and Materials.* | | | | | | | | | | | | | |
| To all Foreign Countries | 928,000 | 923,000 | 892,000 | 848,000 | 808,000 | 898,000 | 928,000 | 895,000 | 947,000 | 1,018,000 | 1,104,000 | 1,029,000 | 1,044,000 |
| „ „ British Colonies and Possessions | 649,000 | 694,000 | 633,000 | 586,000 | 566,000 | 658,000 | 730,000 | 701,000 | 742,000 | 816,000 | 950,000 | 979,000 | 928,000 |
| „ British India | 147,000 | 139,000 | 134,000 | 140,000 | 127,000 | 159,000 | 147,000 | 152,000 | 152,000 | 165,000 | 199,000 | 219,000 | 200,000 |
| „ Self-Governing Colonies | 399,000 | 446,000 | 396,000 | 335,000 | 330,000 | 392,000 | 458,000 | 438,000 | 461,000 | 502,000 | 589,000 | 577,000 | 569,000 |
| „ Other Brit. Colonies and Possessions | 103,000 | 109,000 | 103,000 | 111,000 | 109,000 | 107,000 | 125,000 | 111,000 | 129,000 | 149,000 | 162,000 | 183,000 | 159,000 |
| „ Germany | 81,973 | 85,607 | 84,549 | 86,296 | 88,178 | 88,211 | 105,864 | 105,230 | 115,674 | 129,646 | 125,539 | 110,836 | 115,266 |
| „ Belgium | 63,348 | 63,905 | 66,801 | 62,324 | 32,363 | 62,982 | 70,949 | 73,248 | 80,378 | 81,390 | 86,140 | 79,222 | 82,289 |
| „ Holland | 33,114 | 33,228 | 30,093 | 31,352 | 31,280 | 29,960 | 30,155 | 31,122 | 36,181 | 38,753 | 39,277 | 33,590 | 30,828 |
| „ France | 102,507 | 125,556 | 113,110 | 93,624 | 95,164 | 96,654 | 94,342 | 98,735 | 102,569 | 110,466 | 113,835 | 107,556 | 117,693 |
| „ Russia | 51,278 | 39,974 | 38,913 | 46,879 | 42,382 | 49,924 | 47,784 | 43,927 | 59,342 | 46,160 | 44,287 | 47,991 | 38,613 |
| „ Italy | 40,585 | 41,369 | 33,626 | 33,629 | 66,870 | 40,077 | 37,609 | 34,684 | 30,735 | 37,311 | 41,631 | 40,367 | 37,593 |
| „ United States | 158,406 | 161,672 | 157,648 | 131,639 | 102,397 | 120,588 | 122,491 | 119,151 | 103,148 | 108,125 | 120,325 | 111,542 | 113,593 |
| *Stones and Slates.* | | | | | | | | | | | | | |
| To all Foreign Countries | 398,000 | 358,000 | 367,000 | 343,000 | 340,000 | 273,000 | 296,000 | 266,000 | 252,000 | 253,000 | 223,000 | 206,000 | 229,000 |
| „ „ British Colonies and Possessions | 77,000 | 64,000 | 59,000 | 51,000 | 41,000 | 45,000 | 51,000 | 59,000 | 57,000 | 56,000 | 79,000 | 77,000 | 99,000 |
| „ British India | 3,000 | 4,000 | 4,000 | 3,000 | 2,000 | 2,000 | 3,000 | 3,000 | 3,000 | 4,000 | 4,000 | 5,000 | 4,000 |
| „ Self-Governing Colonies | 67,000 | 54,000 | 46,000 | 38,000 | 31,000 | 34,000 | 37,000 | 45,000 | 44,000 | 40,000 | 44,000 | 43,000 | 55,000 |
| „ Other British Colonies & Possessions | 7,000 | 6,000 | 9,000 | 10,000 | 8,000 | 9,000 | 11,000 | 11,000 | 10,000 | 12,000 | 31,000 | 29,000 | 40,000 |
| „ United States | 107,938 | 79,183 | 74,443 | 110,685 | 80,421 | 70,041 | 68,727 | 42,587 | 36,008 | 33,323 | 41,645 | 37,349 | 41,049 |
| „ Germany (States) | 185,480 | 192,560 | 204,050 | 149,743 | 174,951 | 121,479 | 124,259 | 132,211 | 116,181 | 127,570 | 95,284 | 92,237 | 99,958 |
| „ Belgium, Holland, France and Italy—None given. To Russia—Grindstones, &c. only. | | | | | | | | | | | | | |
| *Manufactures of Wood.* [This includes Cabinet Work, Ready-made Joinery, and even Sawn Timber.] | | | | | | | | | | | | | |
| To all Foreign Countries | 327,000 | 170,000 | 126,000 | 143,000 | 148,000 | 142,000 | 178,000 | 212,000 | 178,000 | 181,000 | 165,000 | 144,000 | 194,000 |
| „ „ British Colonies and Possessions | 264,000 | 295,000 | 238,000 | 227,000 | 200,000 | 239 000 | 321,000 | 309,000 | 299,000 | 296,000 | 274,000 | 300,000 | 370,000 |
| „ British India | 38,000 | 31,000 | 49,000 | 54,000 | 34,000 | 72,000 | 136,000 | 109,000 | 94,000 | 76,000 | 46,000 | 34 000 | 48,000 |
| „ Self-Governing Colonies | 165,000 | 147,000 | 56,000 | 46,000 | 40,000 | 43,000 | 57,000 | 81,000 | 83,000 | 95,000 | 62,000 | 128,000 | 131,000 |
| „ Other British Colonies & Possessions | 61,000 | 117,000 | 133,000 | 127,000 | 126,000 | 124,000 | 128,000 | 119,000 | 122,000 | 125,000 | 166,000 | 138,000 | 191,000 |
| „ France | 14,429 | 18,968 | 13,284 | 13,764 | 13,029 | 14,797 | 18 481 | 15,283 | 11,449 | 7,914 | 24,692 | 6,631 | 11,329 |
| „ Russia | 5,039 | 5,405 | 4,128 | 7,340 | 8,169 | 5,229 | 8,090 | 4,301 | 12,444 | 29,658 | 38,753 | 21,390 | 10,414 |
| „ Germany, Belgium, Holland, Italy and United States—None given. | | | | | | | | | | | | | |
| *Iron and Steel* [other than tin plates]. | | | | | | | | | | | | | |
| To all Foreign Countries | 14,727,000 | 10,067,000 | 8,960,000 | 8,849,000 | 8,609,000 | 9,110,000 | 11,729,000 | 12,474,000 | 11,773,000 | 15,407,000 | 17,132,000 | 11,419,000 | 12,869,000 |
| „ „ British Colonies and Possessions | 9,975,000 | 9,289,000 | 6,992,000 | 6,418,000 | 5,519,000 | 6,080,000 | 8,697,000 | 8,893,000 | 7,875,000 | 9,039,000 | 10,514,000 | 9,885,000 | 11,676,000 |

* These Totals are made up of those for "British India," "Self-Governing Colonies" and "Other British Colonies and Possessions."

VALUE OF ARTICLES, MANUFACTURED OR PARTLY MANUFACTURED, IMPORTED INTO THE UNITED KINGDOM FROM FOREIGN COUNTRIES.

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Window Glass.* | | | | | | | | | | | | | |
| From Germany | 59,001 | 68,630 | 55,887 | 47,118 | 86,507 | 99,431 | 86,893 | 97,606 | 81,062 | 69,459 | 88,182 | 80,675 | 77,853 |
| „ Belgium | 347,320 | 322,991 | 345,008 | 288,136 | 360,214 | 327,641 | 360,478 | 375,913 | 484,892 | 494,427 | 451,200 | 424,201 | 470,530 |
| „ Holland | 62,513 | 81,575 | 152,598 | 166,153 | 126,213 | 103,318 | 138,841 | 129,303 | 133,312 | 99,840 | 105,359 | 174,041 | 243,634 |
| *Lead [Pig and Sheet].* | | | | | | | | | | | | | |
| From Germany | 138,961 | 186,980 | 105,366 | 66,593 | 53,641 | 70,396 | 100,324 | 119,772 | 106,836 | 117,684 | 62,624 | 67,639 | 100,971 |
| „ Belgium | 78,040 | 42,541 | 19,590 | 7,683 | 14,462 | 33,223 | 45,896 | 26,095 | 40,399 | 11,652 | 23,874 | 34,732 | 49,298 |
| „ Holland | 49,519 | 29,686 | 38,089 | 36,149 | 19,185 | 13,850 | 2,712 | 1,762 | 2,870 | 4,155 | 788 | 4,608 | 530 |
| „ France | 29,963 | 30,594 | 37,392 | 21,089 | 21,037 | 43,940 | 20,810 | 32,096 | 23,320 | 4,239 | 27,398 | 45,662 | 15,142 |
| „ Italy | — | — | — | — | — | 1,900 | — | 17,645 | 28,185 | 30 | 42,009 | — | 25,700 |
| „ United States | 85,759 | 124,068 | 98,123 | 172,997 | 116,033 | 113,537 | 331,633 | 356,331 | 399,257 | 475,777 | 683,328 | 581,685 | 565,170 |
| *Girders, Beams and Pillars.* | | | | | | | | | | | | | |
| From Belgium | 404,649 | 387,923 | 337,697 | 283 296 | 321,025 | 360,036 | 359,214 | 396,506 | 519,083 | 492,305 | 563,697 | 687,175 | 671,617 |
| „ Holland | 104,712 | 121,035 | 160,225 | 136,019 | 105,832 | 75,936 | 105,977 | 83,367 | 92,586 | 80,718 | 100,889 | 127,248 | 141,830 |
| *Painters' Colours and Pigments.* | | | | | | | | | | | | | |
| From Germany | 238,080 | 226,953 | 229,971 | 216,948 | 199,164 | 172,674 | 202,401 | 195,905 | 221,472 | 219,350 | 261,903 | 198,570 | 214,184 |
| „ Belgium | 221,075 | 195,450 | 211,274 | 210,416 | 181,233 | 183,746 | 194,555 | 213,135 | 273,234 | 276,568 | 278,244 | 308,976 | 291,917 |
| „ Holland | 419,927 | 406,091 | 435,111 | 436,230 | 387,379 | 378,875 | 432,183 | 406,718 | 430,053 | 476,718 | 453,918 | 498,725 | 540,942 |
| „ France | 91,132 | 79,632 | 73,793 | 61,981 | 58,528 | 59,486 | 58,817 | 59,096 | 53,735 | 58,815 | 64,448 | 67,483 | 60,962 |
| „ Russia | 1,050 | 3,007 | 3,711 | 1,339 | 5,879 | 5,150 | 10,256 | 26,596 | 10,050 | 3,530 | 16 | 134 | 31 |

| — | 1890. | 1891. | 1892. | 1893. | 1894. | 1895. | 1896. | 1897. | 1898. | 1899. | 1900. | 1901. | 1902. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Painters' Colours and Pigments*—cont. | £ | £ | £ | £ | £ | £ | £ | £ | £ | £ | £ | £ | £ |
| From Italy | 8,765 | 5,779 | 2,518 | 2,420 | 3,213 | 3,386 | 3,985 | 5,791 | 5,266 | 4,712 | 6,392 | 5,255 | 6,928 |
| „ United States | 34,833 | 42,670 | 38,283 | 43,891 | 51,713 | 47,302 | 58,613 | 73,706 | 102,144 | 100,799 | 251,181 | 196,548 | 133,140 |
| *Stones.* | | | | | | | | | | | | | |
| From Germany | 4,425 | — | — | 4,064 | 3,316 | 7,223 | 8,778 | 10,830 | 10,176 | 10,653 | 10,959 | 12,468 | 9,433 |
| „ Belgium | 142,051 | 131,360 | 140,574 | 175,843 | 170,029 | 172,373 | 198,031 | 202,639 | 202,779 | 187,247 | 186,723 | 199,074 | 219,104 |
| „ Holland | 21,834 | 21,183 | 24,488 | 26,282 | 29,256 | 24,266 | 41,982 | 44,849 | 43,565 | 47,459 | 73,021 | 93,706 | 98,686 |
| „ France | 70,082 | 77,341 | 87,568 | 101,202 | 113,191 | 82,711 | 76,3 7 | 85,6,3 | 109,102 | 126,970 | 27,450 | 153,193 | 143,706 |
| „ Italy | 146,606 | 146,048 | 144,698 | 134,486 | 129,533 | 125,856 | 168,864 | 165,342 | 199,269 | 231,196 | 196,430 | 206,952 | 223,127 |
| „ United States | 11,561 | 9,710 | 12,839 | 7,580 | 6,955 | 12,029 | 7,644 | 8,176 | 7,317 | 8,210 | 15,312 | 8 217 | 12,456 |
| *Slates.* | | | | | | | | | | | | | |
| From Belgium | — | — | — | — | — | 21,907 | 25.084 | 18,871 | 13 252 | 19 816 | 13,106 | 13.732 | 12 521 |
| „ France | — | — | — | — | — | 33,074 | 56.224 | 50,395 | 38,903 | 53,528 | 45 599 | 45 474 | 105.892 |
| „ United States | — | — | — | — | — | 11,206 | 98,665 | 229 222 | 267 479 | 253 976 | 177,964 | 196,343 | 128 054 |
| *House Frames and Joiners' Work.* | | | | | | | | | | | | | |
| From Germany | 116,343 | 121,001 | 121,083 | 109,277 | 115,993 | 123,452 | 126 166 | 140,779 | 131,187 | 136,583 | 101,959 | 110.424 | 112,175 |
| „ Belgium | 86,612 | 89,021 | 87,029 | 85,217 | 76,391 | 75,120 | 104.106 | 140,307 | 123.330 | 135 437 | 94 534 | 99.892 | 138.079 |
| „ Holland | 43,643 | 47,572 | 53,218 | 51,205 | 63,125 | 71,176 | 82 623 | 91 642 | 113,041 | 113 144 | 94,256 | 100,817 | 86,548 |
| „ France | 112,382 | 93,454 | 84,805 | 81,335 | 66,651 | 88,236 | 101.256 | 122,338 | 149 154 | 144 958 | 169 424 | 214,112 | 247,514 |
| „ Russia | 2,458 | 3,519 | 8,039 | 9,289 | 9,473 | 7,129 | 6 250 | 4,128 | 14,397 | 19,220 | 4 749 | 1,777 | 4,113 |
| „ United States | 162,924 | 195,481 | 185,410 | 193,681 | 206,922 | 262,126 | 362.956 | 430,470 | 581,587 | 648 346 | 516,459 | 475 687 | 386 507 |

WOOD IMPORTS INTO THE UNITED KINGDOM FROM CANADA.

| | 1890. | 1891. | 1892. | 1893. | 1894. | 1895. | 1896. | 1897. | 1898. | 1899. | 1900. | 1901. | 1902. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Hewn, of all sorts | 883,481 | 703,564 | 919,469 | 655,484 | 600,487 | 561,634 | 754,213 | 794,594 | 525,074 | 535,622 | 604.052 | 497,914 | 460,542 |
| Sawn or split, of all sorts | 2,896,879 | 1,989.500 | 2,793,026 | 2,480,391 | 2,863,026 | 2,583,185 | 3,376,320 | 4,654,146 | 3,817,170 | 4,215,147 | 4,637.651 | 4,029,223 | 4,385,261 |
| Staves of all dimensions | 7,476 | 8,311 | 11,455 | 1,825 | 1,672 | 4,984 | 10,453 | 11,805 | 21,777 | 21,716 | 17,757 | 22,253 | 8,279 |
| Furniture woods and hard woods (except mahogany). | 18,425 | 18,562 | 21,176 | 46,101 | 25,175 | 24,831 | 31,231 | 42,759 | 35,154 | 50,383 | 45,390 | 27,745 | 35,317 |
| House frames, fittings and joiners' work | — | 9,496 | 11,593 | 17,909 | 19,299 | 18,885 | 33,877 | 42,769 | 55,180 | 61,534 | 28,239 | 30,151 | 40,99 |

# PREFERENTIAL TARIFFS.

### A Year's Imports by our Colonies from Foreign Countries.

THE Board of Trade report on the imports by our colonies from foreign countries supplies some interesting figures. We have extracted the following as relating to the building and kindred trades (unless otherwise stated the figures relate to 1901):—

| | £ |
|---|---|
| *India.* | |
| Iron and steel:— | |
| Iron, angle, bolt, bar and hoop | 350,000 |
| Other manufactures of iron | 107,000 |
| Steel, angle, bars, beams, pillars, &c. | 428,000 |
| Steel, plates and sheets | 147,000 |
| Other manufactures of steel | 211,000 |
| *Australia.* | |
| Cement and plaster-of-Paris | 153,000 |
| Timber, rough and undressed | 383,000 |
| Tiles (1900) | 13,000 |
| Paints and colours (1900) | 25,000 |
| *New Zealand.* | |
| Iron and steel:— | |
| Pig, bar, bolt, angle, hoop, sheet and plate | 37,000 |
| Pipes and fittings | 20,000 |
| Wire fencing and netting | 35,000 |
| Sawn wood and timber (1900) | 2,000 |
| Iron pipes and fittings (1900) | 23,000 |
| Nails (1900) | 33,000 |
| *Natal.* | |
| Cement | 34,000 |
| Wood and timber, unmanufactured | 140,000 |
| Wood and timber, planed and grooved | 53,000 |
| *Cape of Good Hope.* | |
| Cement | 43,000 |
| Wood and timber, unmanufactured | 256,000 |
| Wood and timber, manufactured | 225,000 |
| Iron pipes and piping (1900) | 11,000 |
| Paints, &c. (1900) | 12,000 |
| *Canada.* | |
| Paints, dry white and red lead, orange mineral and zinc white (1900) | *67,000 |
| Portland cement | 89,000 |
| Hardware (builders', cabinet-makers', &c.) | 103,000 |
| *Canada*—cont. | |
| Iron and steel:— | £ |
| Pig-iron and iron or steel ingots, slabs, blooms, loops, &c. | 133,000 |
| Bar, plates, sheets and hoops | 402,000 |
| Bridges or parts thereof or structural work | 282,000 |
| Pipes and tubing | 140,000 |
| Railway and tramway materials:— | |
| Bars and rails | 624,000 |
| Railway cars of all kinds and parts | 104,000 |
| Rods for making wire | 127,000 |
| Wire of all kinds, wire fencing and rope | 256,000 |
| Wood and timber:— | |
| Planks, boards, &c., rough sawn: | |
| Oak | 165,000 |
| Other kinds | 365,000 |
| *Straits Settlements.* | |
| Wood and timber | 168,000 |
| *Ceylon.* | |
| Iron, angle, bar, rod and hoop | 10,000 |
| Iron, all other kinds | 7,000 |
| *Jamaica.* | |
| Hardware and cutlery (including nails, screws, &c.) | 21,000 |
| Wood and timber of all kinds (including furniture) | 57,000 |
| *Barbados.* | |
| Wood, manufactured and unmanufactured | 46,000 |
| *Trinidad.* | |
| Wood and timber of all kinds (including furniture) | 51,000 |

The total value of the above imports amounts to no less than £5,958,000—nearly six millions of pounds sterling. With preferential tariffs it is contended that a large proportion might very possibly be diverted to home manufacturers.

### Former Preferential Duties on Wood Imports from our Colonies.

The first instance of preference on wood imports from our colonies was in 1721, when, on account of the heavy cost of bringing timber from America, Parliament decided to allow the importation of timber from British America free of duty for twenty-one years, which permission was subsequenty extended to 1809. In the latter year duties were imposed on the imports of wood from the British plantations (owing to the necessities of war), but preference was still granted them over imports from the Baltic. The timber duties were increased until 1819, but the preference was maintained, and Canadian exports to the United Kingdom increased as the Baltic exports fell off. As an example, the duties on Canadian deals were 2s. 6d. per 50 cub. ft., and on foreign deals £3 5s. per 50 cub. ft. These rates were altered in 1820 to 10s. and £2 15s. respectively, this ratio of preference being intended to neutralize the extra cost of freight across the Atlantic. Preference continued to be accorded until 1860, when a uniform rate of duty was imposed. All duties were abolished in 1866.

### Miscellaneous Notes.

There is a treaty between France and the United Kingdom in respect of Canada, by which certain articles of Canadian production enter France, Algeria and French colonies under the French minimum tariff. These articles include building timber, in the rough or sawn, wood pavement, flooring of soft wood, and common furniture.

On galvanized corrugated sheets exported from this country into Russia a duty equal to £15·22 per ton is levied.

In Germany the Kartells (syndicates of firms) sell surplus products in foreign countries—that is, they "dump" them—often at lower prices than in Germany itself, a subvention being paid to the exporter. A similar practice in the United States was investigated by an industrial commission, by whom a number of enquiries were addressed to important firms. One firm, stated to produce 60 per cent. of the United States output of asbestos goods (roofing and paints), exports these through commission houses, declaring itself to give commission merchants 5 per cent. better prices than local dealers.

Mr. Baldwin, president of the Otis Elevator Co., which is doing about 85 per cent. of the elevator business in America, said, however, that the machines they shipped abroad chiefly came to the London company, to which they are billed on about the same basis of prices as to the selling offices in the United States.

Mr. Bond, president of the American Radiator Co., which produces about 50 per cent. of the heating appliances manufactured in the United States, also stated that his firm did not sell in foreign markets at lower prices than those charged in America.

### Wood and Timber Imports during 1902.

| | £ |
|---|---|
| From British Possessions | 6,327 |
| „ Foreign countries | 18,858 |
| „ Russia | 6,149 |
| „ Canada | 4,888 |
| „ Sweden | 4,563 |
| „ United States | 3,739 |
| „ Norway | 1,822 |

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* £41,000 from the United States.

## S.K. EXAMINATIONS, 1903.

### BUILDING CONSTRUCTION: Honours, Part II.

[Answers to questions set in the Elementary examination were given in our issue for May 20th last, to the Advanced in the issue for May 27th, and to Honours, Part I., in the issue for July 8th.]

THE questions are numbered 61 to 70 (ten questions), but owing to alternative questions under the numbers 61 and 62 there are really fifteen separate questions from which to choose five.

In these examinations for evening classes there appears to have been some effort to bring into the questions branches of the subjects in which candidates are likely to have had practical experience in their daily work. In all science subjects there is necessarily a good deal of overlapping. Men who proceed beyond the Advanced stage may be supposed to have ambition to become architects or civil engineers; civil engineers appear to find it more necessary than architects to have a solid foundation of scientific education on which to rest the practical work of their profession. It is no more than fair to give some weight to what the studious architect's pupil may have learned of historical structures in a direction supposed to lead to *art*, in order to make up for apparent advantages given to engineers in questions involving chemistry and mechanics; though I am of opinion that a knowledge of these subjects, in so far as they concern building, is just as necessary to the architect as to the civil engineer. There is art in architecture, though many persons have great difficulty in distinguishing between art and fashion. The trouble in architecture is that many of the articles produced are more permanent than ladies' bonnets or hooped skirts.

Whether a man is to become an artist in building, or the possibly more profitable thing, a building milliner, he needs to study the history of architecture, and these questions may fairly be put in a scientific paper. To give a single question in such a large subject as the history of architecture, and to make the answer to it imperative and qualifying, would be unfair, but in this case the candidate is given seven questions from which to choose one.

### Division I.

61. Answer only one of the following (*a*), (*b*), (*c*) or (*d*):—

(*a*) Draw to fill a space $2\frac{1}{2}$in. deep and 5in. long the Greek double guilloche ornament. (80)

(*b*) Sketch to fill a band $2\frac{1}{2}$in. deep the complete honeysuckle and lotus, or papyrus and lotus, Greek ornament. (80)

(*c*) Draw faintly in pencil fourteen parallel straight lines $\frac{3}{16}$in. apart; on these, making use of them, work a Greek fret. (80)

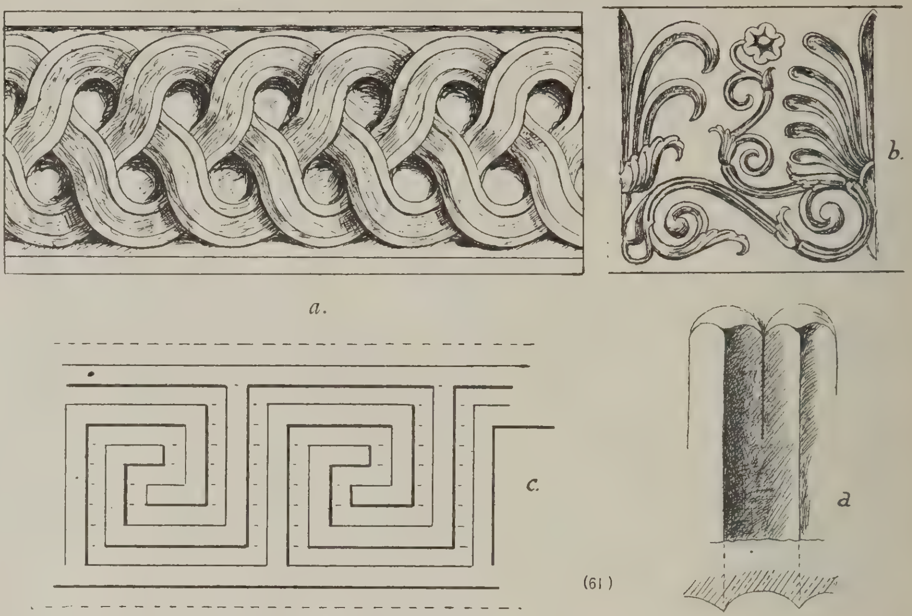
(*d*) What is a choragic monument? Describe the choragic monument of Lysicrates. Sketch the termination of a flute (at its top). (80)

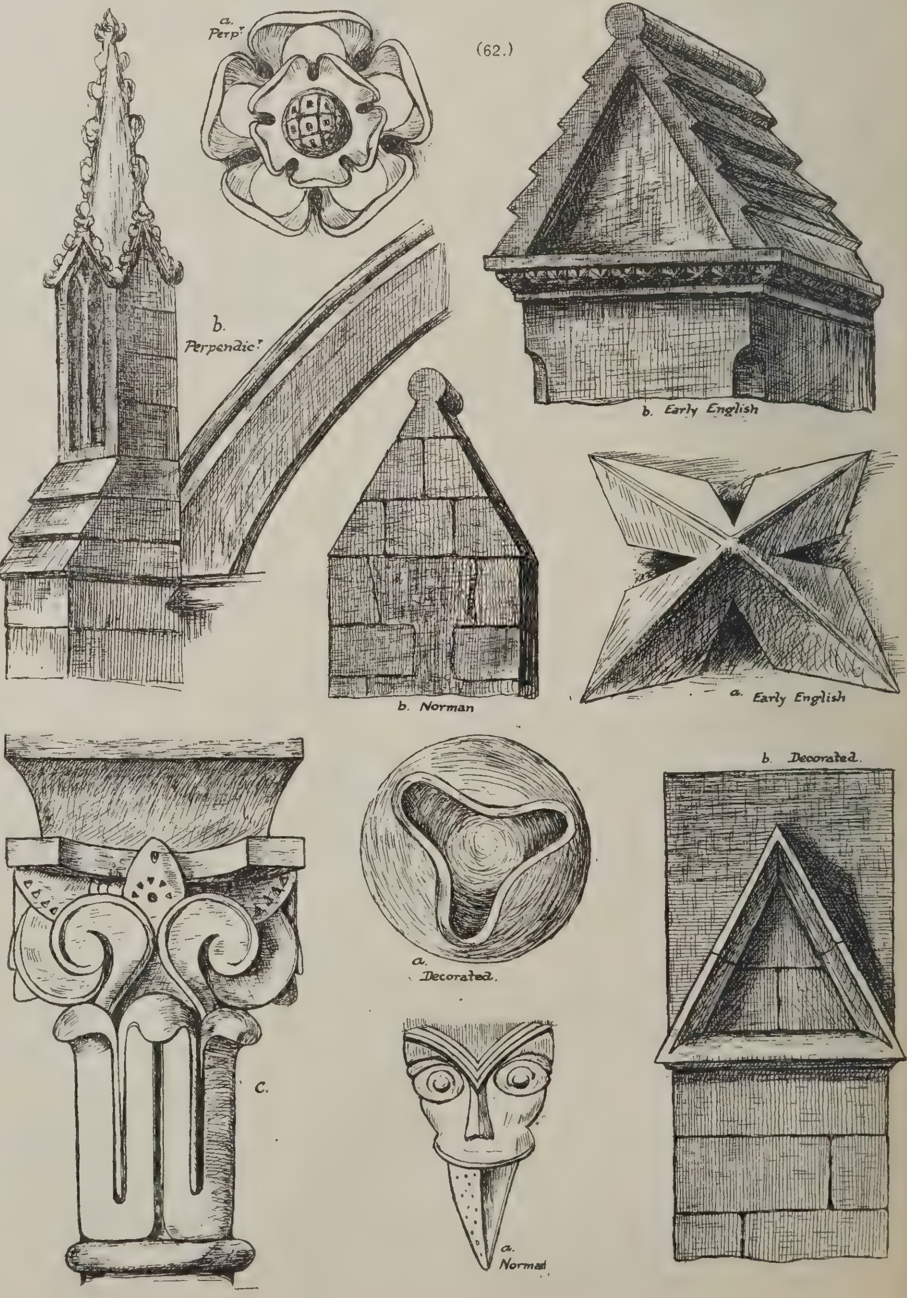
(*a*) See accompanying illustration.

(*b*) See accompanying illustration. This sketch may or may not be taken to be the "complete" ornament. If the question is interpreted very strictly the drawing should be continued to twice the length so as to show both right and left-handed portions of the elements. Candidates should know they are required to give evidence that they *know* what they are about and that they can sketch neatly. Mere quantity of inaccurate and slovenly work on the part of competitors has no chance whatever against them.

(*c*) See accompanying illustration.

(*d*) A monument erected (at his own expense) in honour of the choragus who gained the prize by the exhibition of the best musical





or theatrical entertainment at the festival of Bacchus.

The monument of Lysicrates may be described as consisting of a pedestal, square in plan, about 9ft. on the side and about 9ft. above the former level of the site, having a projecting simple cornice at the top. On this pedestal rests a circular stylobate (I use the word stylobate here as distinct from pedestal, confining it to mean the circular element placed upon the pedestal as upon a table); upon the stylobate (which consists of two steps, the upper riser being moulded round its top) rest six columns which carry an entablature, over which rises a flat dome of double curvature sustaining at its centre an elaborately carved capital on which stood the tripod. The columns are about 10ft. high (to top of capital); the height from ground to plate, on which the tripod stood, is about 30ft. The order is Corinthian.

See accompanying illustration. The drawings of these flutings given in books do not agree. In most cases the flutes are shown with fillets between: I show the flute without fillets. I happen at the present moment to be unable to settle the point; I think it should be settled. A photograph which I have before me appears to favour the sharp edge which I show, and it also shows a small overhang of the top of the flute which my sketch does not indicate.

62. Answer one only of the following (*a*), (*b*) or (*c*):—

(*a*) Sketch for each of the "styles"—Norman, Early English, Decorated and Perpendicular — at least one characteristic moulding ornament. (80)

(*b*) Sketch for each of the "styles"—Norman, Early English, Decorated and Perpendicular—the top of a buttress. (80)

(*c*) Sketch a Moorish capital (Alhambra) with fairly elaborate ornament. (80)

(*a*), (*b*) and (*c*). See accompanying illustrations.

### DIVISION II.

*63. The drawing shows the plan and the front elevation of a cottage which has been built for the accommodation of a clergyman. Write down full instructions which would be sufficient to guide an assistant to write a complete specification for the work, to be executed by contract.

Instruct him as to detail drawings. Note for his guidance any small omissions on the drawing. (80)

The cottage being for a clergyman, the work should be altogether of a higher class than might be suitable in a cottage of this size for a different class of tenant. There is no bathroom—it may be taken for granted that there is not a high-pressure water supply; it may be supposed, however, that water from a spring or stream is brought by pipe to the scullery sink and to a side boiler in the kitchen range and to the w.c. The plan does not indicate a drain: we may assume the fall to be to the right, and the course of the drain to be as shown by the broken line, and that it discharges into a cesspool 20yds. from the w.c. The plan should show the pathway to the house, and there should be a "block plan" to show the plot on which the cottage is built, indicating the fences and the gate or gates giving access from a carriage road. The opening for door from sitting-room to bedroom should, if possible, give space from the outside wall for architraves. It would be advisable to indicate the sides on which it is proposed to hinge the doors. Show down-spoutings to two tanks for rainwater—one in yard and one beside (but clear of) servants' bedroom window.

Draw full-sized cross-sections of sitting-room, hall and bedroom cornices; any other plaster decorations should be drawn to a large scale. Draw full-sized cross-sections of architraves and panel mouldings. Draw to a large scale mantel and overmantel of sitting-room. Draw cross-section through window-sills showing wood sills and bottom rails of sashes. Draw details of hall door and hall partition and door. The cottage is not suitable for a married man, and if it has been built for a clergyman he is probably a Roman Catholic curate in some rural parish.

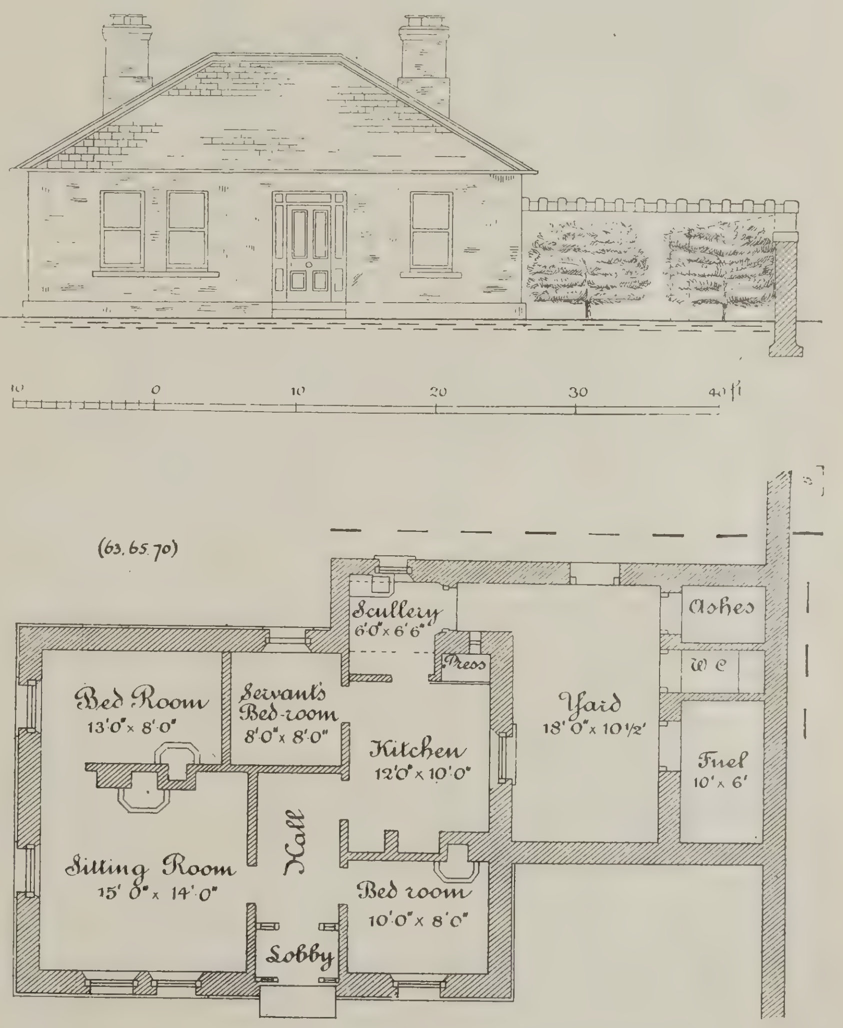
Specification of works to be done to build a cottage at              , in the county of              , for the Rev.              .

Interpretation clause.

General conditions.

Date of completion, November 1st, 1903.

Penalty, £6 a month. Three payments—(1) when carcase completed; (2) when house completed; (3) deferred balance after three months.

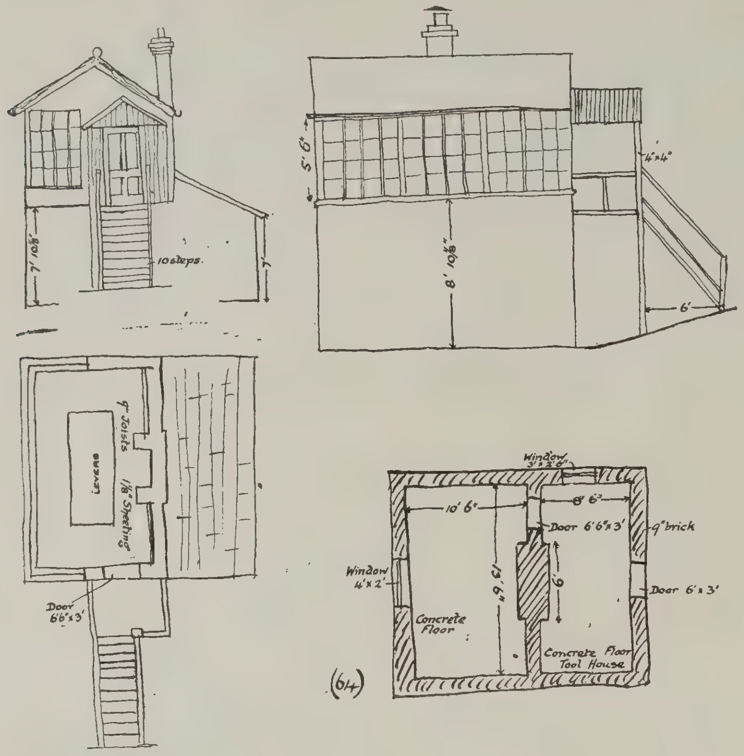


*Excavation.*—Trenches for outside walls 2ft. 6in. deep at least, but to go down to good foundation. Clear under floors, yard, &c., to prepare for foundation of concrete for drain and cesspool; for the fall and for the sizes given. Provide for distribution of surplus for forming paths by hand-pitching and gravel; for any levelling of pleasure ground and terracing; for foundations of gate pillars and for any boundary walls; for the pipe for water supply.

*Masonry.*—Character of masonry—good rubble masonry, with spauls, to be rough-casted; quality of stone; quality of mortar; describe quoins, and reveals and soffits of opes. Stone or brick dressings or worked in concrete; lintels and sills; gate pillars. Boundary walls. Brickwork: inside walls, chimney breasts, flues, stacks, &c.; drain pipes, fall 1 in 50, cesspool; chimney-pots.

*Concreting.*—Character of Portland cement, proportions of ballast, broken stones. Character of finished surface: levels to be at such level under wood floors as to allow for depth of joists and thickness of sheeting to form foundations for tiling in hall and lobby and hearths.

*Carpenter and Joiner.*—All timber to be best Baltic red deal unless otherwise described; to be free from defects; sizes to be finished sizes. Bedrooms and sitting-room joists, 4in. by 2in., laid on ½in. tassels to keep clear of concrete; 1⅛in. tongued and grooved flooring; rafters and ceiling joists 5in. by 2in. (spacing of rafters, joists, battens, to be 12in. from centre to centre); collar braces, 5in. by 1½in. Ends of rafters to project beyond walls, dressed to pattern shown; projection 18in. sheeting cleaned to cover projection. Slate battens 3in. by 1in. All outside walls to be stoothed, 1in. by 2in. stoothes. Doors outside hall door and framing and inside partition as shown on detail drawings; three other panelled doors 2in. framing, four panels ¾in. Mouldings and architraves as on details: 2in. frames to fit thickness of walls. Oak door saddles, 4in. butt hinges, mortice-locks and wood handles. Drawback and latch for hall door; mortice lock for inside door. Specify for provision for glass for inside door and for framing of bath doors. Framed and filled doors, 2in. framing, ¾in. sheeting, 1¼in. bars, butt hinges (no door on ashes or dust). Servants' and scullery-room, rim-locks, brass handles. Outside scullery and yard doors, stock locks, thumb-latches; w.c. and fuel, thumb latches; inside bolt w.c. Windows, 2in. sashes, frames 1½in., brass-faced pulley boxes double-hung, green hemp cords, cast-iron weights; jamb linings; bead and flush framed architraves. Skirtings; bedrooms plain 1in., 7in. deep, beaded: sitting-



(64)

room moulded as shown on detail. Trimmings to be fixed to grounds with screws. Press for stores in kitchen: shelves full depth; framed front, framed and filled doors, butt hinges, lock and key. Picture rail in sitting-room.

*Slater.*—Best Bangor slates; slate 24in. by 12in., not to weigh less than 7lbs.; laid 4in. lap, fastened with 1¼in. copper slating nails; well rendered with well-haired good rendering mortar. Flashing step and counter 5lb. lead: ridges roll tiles. Fuel and w.c. roofed with 18-gauge galvanized corrugated iron on felted 1in. sheeting. Eaves-gutters 4in. half-round, 4in. down-spouting, all securely fixed.

Electric bells. Water pipe from stream, plug-cock at scullery sink and at range side, boiler-plug grating and waste from sink to channel shoe on drain gulley in yard, w.c. connection with drain overflow from rain-water tanks. Rainwater tanks, galvanized, to hold 500 gals. each, on stand, with draw-off cocks, wood covers. Entrance gate. Kitchen range £10, grates and mantels as shown on details.

*Plasterer.*—Inside 3-coat work, render, float and set, coarse stuff well haired, setting finished smooth grey: cornices as shown on detail. Outside reveals and soffits and plinth in smooth cement work. General face work rendered rough-floated and rough-casted. Chimney stacks neatly tuck-pointed. Hall, lobby and hearths tiled (patterns referred to). Door step.

*Glazing.*—Sitting-room, British plate; bedrooms, 32oz. sheet. Kitchen, scullery, servants, 21oz. sheet. Door-glass, hall partition, British plate. Any other glass 21oz. sheet.

*Painter.*—Inside doors, trimmings, &c., varnished 3-coat work. Carriage varnish. Sashes and outside work, 4-coat plain painting. Hall door brought up smooth, finished bronze-green, finished in body varnish. Eaves-gutters, spoutings, &c., 3-coat bronze-green. Under eaves 3-coat varnishing.

64. Make such sketches as will enable an assistant to make complete drawings for a switch and signal cabin at a village railway station. Write full instructions from which he can write a specification for the work, which is to be done by contract (omit levers and electrical arrangements). (80)

See illustrations above.

The specification is to commence with the general conditions printed for use in the office; strike out any clauses which obviously do not apply to this work. To be completed in two months. Excavation for concrete and footings; bottom of trench to be 2ft. 6in. from surface; floor to be of concrete at level of surface. Excavate 12in., fill in with pitching-stones and spauls to within 4in.; floor to be formed of good concrete, 4in.; course of concrete, 12in. deep, 18in. wide for walls; brick footing, 18in. wide, four courses deep, 9in. brickwork, all best red compressed facing bricks. English bond, flat struck joints both faces. Floor, 9in. by 2in. joists, 1⅛in. sheeting. Timber to be red Baltic. Rafters 4in. by 2in., cleaned, sheeted ¾in. in cleaned sheeting, felted; slates, 24in. by 12in., copper nails; pitch of roof 39 degs.; blue roll-crested ridging, 4in.; eaves-gutters 4in.; down-spouting; sashes 2in., front in three divisions; 6in. by 6in. posts on continuous oak sill. End sashes to be in two sashes each, one sash of each pair to slide horizontally; top piece of framing 4in. by 6in. to form wall-plate over lights; other wall-plate, 3in. by 4in. Eaves and barges to project 12in. Neat barge-boards, 6in. by 2in., slates step flashed; 5lb lead to barge-boards. Porch to be framed in wood, 4in. by 4in. posts, and top frame; platform framed in itself, made fast to posts with four 1in. bolts. Lean-to part to have top edge of roof made watertight by cover flashing in short length, and having good splicing lap. Doors 6ft. 6in. by 3ft., to be 2in. bead and flush outside frames, 1½in. panels, solid rebated frames. Good stock locks, good heavy brass thumb-latch. Shelter of porch and south-east side to be sheeted ¾in. sheeting, felted, and covered with corrugated iron 24-gauge. Chimney-pot. Steps to the shelter sides 9in. by 3in., steps 2in. Ten steps 9in. breadth, 2ft. long. Hand-rails 3in. by 3in., framed to balusters 2in. by 3in., bolted to sides (¾in. bolts) 1ft. 6in. apart.

Good strong hob grate. Glazing 21oz. sheet-glass. Painted outside woodwork, sashes, eaves-gutters and spoutings, &c.; 4 coats plain paint inside, varnished 3 coats.

*(To be concluded next week.)*

# A NEW COMPETITION.

**Prizes of £4 4s. offered.**

THE sketching of old architecture, as we have already pointed out, is very much overdone. As an instance of this, we recently took occasion to observe what little real use was to be derived from roaming in Normandy, Belgium and other Continental places, now so easily accessible, and there making innumerable sketches of old churches, dilapidated streets and tumble-down houses: whilst almost ignoring modern work.

How few architects with sketch-books full of old architecture have taken half as much trouble with great civic buildings in London, Paris, Brussels or Berlin.

With the object of stimulating interest in the study of modern work, we offer two prizes of two guineas each—one for the best

**Pen-and-Ink Sketch**

and the other for the best

**Sketch in Wash**

of some detail on a modern building.

The word "modern" is intended to cover the last twenty or twenty-five years.

The word "detail" is intended to refer to some special treatment. It does not mean ornament simply. As examples of what might be special treatments we suggest the corner window of a house, the turret on a large hall, or the top-floor storey of some business premises.

The building may be of any kind and in any country.

The sketches should be made technical—that is, they should aim at showing the constructive skill of the architect; they must not be merely "pretty," nor impressionist skeletons of lines where the very details which one wishes to see are left to the imagination.

The line sketches should be drawn in black ink on white paper or Bristol board, and the requirements of reproduction should not be overlooked—strong clear lines; *gradation in tone being obtained by thinness of line and not by weakening the ink.*

The wash sketches should be in black and white, or sepia: they must *not* be in colour.

In making the award regard will be had for the intrinsic merit of the detail chosen as well as for the competitor's draughtsmanship.

All drawings must be sent in by the 31st of October, addressed to

The Editor of The Builders' Journal,
9, East Harding Street,
Fetter Lane, London, E.C.

On the back of each must be written the title of the building from which the detail is taken, the name of the architect of the building, and the competitor's name and address. A competitor may send as many drawings as he pleases.

All drawings will be returned to their owners, but the Editor reserves the right to publish such as he choses.

To all competitors whose drawings are thus used, excepting the two prize drawings,

**A Copy of "Specification No. 6"**

will be sent.

If the competition proves to be a success additional prizes of a similar kind—though not necessarily for the same purpose—will probably be offered.

# Enquiries Answered.

*The services of a large staff of experts are at the disposal of readers who require information on architectural, constructional or legal matters. Questions should in all cases be addressed to the Editor. The querist's name and address must always be given, not necessarily for publication.*

### Books on Architecture.

SALTBURN-BY-SEA. — A. B. M. writes: "Which are the best books on architecture, architectural design, the principles of ornament, and drawing from the antique?"

See the lists on p. vi of this issue.

### Lime Kilns.

LIVERPOOL.—J. B. writes: "What book deals with lime-kiln construction and lime burning?"

"Specification"—Nos. 4 and 5—to be obtained from 6, Great New Street, E.C., price 5s. 9d. post free each.

### Buildings to Measure around Hampstead and Kilburn.

LONDON, N.W.—E. F. T. writes: "Kindly name some buildings to measure around Hampstead and Kilburn."

This is another case of a correspondent seeking information about his own district. In this instance it is an architecturally barren district. It would be best to come into London, and to measure in the British and South Kensington Museums, at Westminster Abbey, St. Saviour's, Southwark, and the Temple Church. G. A. T. M.

### Floor for Smoking-Room.

BRAY.—C. J. D. writes: "Which would be the cheapest kind of iron girder and concrete floor, also a wooden floor, for the room shown on the accompanying drawing (not reproduced)? The room on the first floor would be used as a smoking-room."

For a wooden floor of 17ft. 6in. span the joists should be 11in. by 3in., 12in. apart. For a steel and concrete floor the lightest possible would be 6lb. by 2lb. by 12lb. rolled steel joists embedded 2ft. centre to centre in the lower side of coke-breeze concrete 8in. thick, carefully mixed and laid, composed of 1 part Portland cement to 4 parts coke-breeze broken to various sizes, the largest piece to pass a ¾in. ring, with all dust screened out, and floated on face with neat cement, or 1 cement to 1 sand if covered with wood-block flooring.

HENRY ADAMS.

### Adjoining Owners: Claim for Encroachment.

LONDON, S.E.—SURVEYOR writes: "Four or five years ago a client of mine built a warehouse in a district where building operations are controlled by a local authority, and not by the L.C.C. In building a flank wall my client caused the external face to coincide with the boundary line between his own and his neighbour's property, and in doing so he put his footings and projection of concrete on his neighbour's property to the extent of 14in. The neighbour now discovers this, and claims compensation for encroachment. Had my client erected his building in a district controlled by the L.C.C., to do as he has done, after having served a notice, would have been exercising one of his rights as a building owner, and in such case the adjoining owner's property would not be deemed to have suffered damage thereby. This being so, how can the adjoining owner have suffered damage in the case in question? Can he legally claim compensation? If so, can he compel my client to buy the land upon which his concrete rests? What is meant by 'dominant' and 'servient' ownership?"

Although your client's neighbour appears to have been very slack in quietly allowing an encroachment to exist so long upon his property, the lapse of four or five years is insufficient, under the provisions of the "Prescription Act" (2 & 3 Will. IV., c. 71), to vitiate his present claim, and I advise you to come to a friendly arrangement with him at once. It is hardly a case of damage but one of encroachment, and I presume that the stability of your client's wall now necessitates the continuance of the encroachment. The usual plan is for a small annual payment (say, 1s. or 2s. 6d.) to be made by the person who has encroached, as an acknowledgment rent for the privilege of its continuance, but the difficulty may also be met, as you suggest, by the purchase of a strip of land sufficiently wide to cover the footings, or, by allowing your neighbour to use the wall in question as a party wall. The terms "dominant" and "servient," as applied to the ownership of land, occur in connection with rights of easement, such as rights of way, light, water, &c. The existence of such a right of easement necessitates that the owner of the servient tenement shall suffer (or refrain from doing) something, on his own land, for the benefit of the owner of the dominant tenement.

G. S. M.

### Darkening Half-Timber Work.

WATFORD.—SEPIA writes: "Which is the best coating for half-timbered (oak) work in order to darken it and prevent it staining stone and brickwork under?"

We think it very foolish to wish to darken oak or try any tricks of deceit. Oak is a beautiful wood when left alone, and will acquire a lovely silver tone with age. Of all the processes of darkening oak the least offensive is that of fumigating with ammonia. To protect stone or brickwork under from discoloration, a trowelled layer of Portland cement may be placed between.

### A Two-Handed Contract.

CARDIFF.—CONSTANT READER writes: "A and B agree to tender for a large amount of work (labour only), and their clients accept their tender; the clients, however, object to two contractors, and seem to prefer A. If A signs for the work, cannot A and B legally form an agreement between themselves to carry out the contract?"

If the clients insist that there shall be no sub-contracting and insert a clause in the agreement to this effect, or a clause giving them or their agent the power to force the contractor to discharge any of his employees if they object to them, as is usually done, you will of course have to abide by their wishes; but if no such stipulation is made A is free to employ whom he pleases and he need only make an ordinary agreement with B; a letter to B stating terms, which he can get stamped, will serve the purpose.

### R.I.B.A. Examination: Drawings of Mr. Norman Shaw's Work.

MOLD.—F. A. R. writes: "(1) In order to be fully qualified for exemption from the R.I.B.A. preliminary examination I have to make four sheets of geometrical drawings for approval. What do you recommend they should be? (2) In what book or paper can I find drawings of Mr. Norman Shaw's half-timber work?"

(1) We would suggest an elliptical arch, construction of scales, a drawing showing perspective sketch and another showing method of obtaining each point and each line, and perhaps another drawing showing a series of problems such as dividing chords, inscribing figures in circles and circles in figures. (2) Consult back volumes of the "Building News" and also Mr. Shaw's book, "Sketches for Cottages."

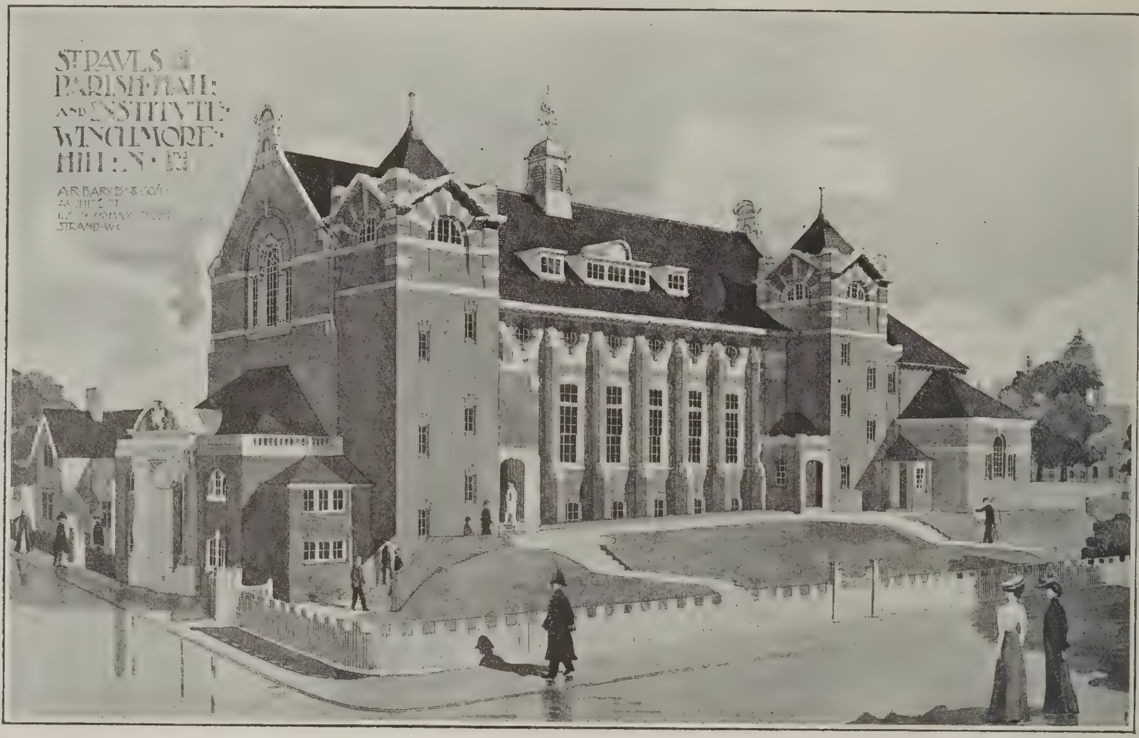
# INSTITUTE OF SANITARY ENGINEERS.

## Visit to the Northern Outfall Works, Barking.

BY kind permission of the chief engineer of the London County Council (Mr. Maurice Fitzmaurice), about forty members of the Institute of Sanitary Engineers visited the northern outfall works at Barking on September 12th.

This outfall consists of three 9ft. brick barrels, known as the high-level, middle-level and low-level. The whole of the drainage of the north side of the Thames, nearly two-thirds of the total, finds its way into these three main sewers. The high-level starts at Highgate, taking the whole of the north and north-east districts, running through Hampstead Heath, Holloway, Stoke Newington, Hornsey, Highbury, Hackney and Kingsland, &c., to Old Ford. The middle-level starts at Paddington and runs through Hammersmith, Oxford Street, Holborn, Clerkenwell, Old Street, Bethnal Green Road, to join the high-level at Old Ford. The low-level starts just outside Chiswick, running through Fulham, Chelsea, along the Embankment, following the river to Shadwell, then branching off towards Bow Common through Bromley to Abbey Mills, taking all the low-lying districts and the East End. The high- and middle-levels come direct to Barking by gravitation, but the low-level is pumped twice, at Pimlico, which is known as the western pumping-station, and again at Abbey Mills, where it is raised 40ft. From Abbey Mills it comes in an unbroken line direct to Barking. The sewage is then treated with lime and proto-sulphate of iron (5 grains of the former and 1½ grains of the latter to 1 gal. of crude sewage).

It then flows along and passes into precipitation channels, of which there are thirteen, each 40ft. wide and averaging 1,000ft. long, over a weir wall 8ft. 6in. high, during which time the sludge settles at the bottom. After running for a number of hours, say anything between 90 and 200, according to weather conditions, the penstocks or valves are closed, and the sewage is allowed to find its level with the weir wall, the water that is left being drawn off by telescopic weirs, which are really open cylinders worked by hydraulic power. The weirs are lowered very slowly to avoid stirring up the sludge. The water or effluent runs away through them and meets the water that has already passed over the weir walls; both then run into the River Thames at any state of the tide. The average daily flow is 130,000,000 gals. The sludge that remains is passed through screens to separate anything contained in it that would be likely to choke the pumps Among the articles found are brushes, tops, balls, sticks, rags, clothes-pegs, &c. The amount of screenings is about 90 tons per week. The sludge is next pumped into settling beds, where it is allowed to stand for twenty-four hours for the purpose of taking off more water (called liquor, which is too black to run into the river and too thin to send to sea). The reason for this is to lessen the percentage of moisture contained in the sludge sent out to sea, generally about 9 per cent. The water that is drawn off in this way is pumped back into the sewers, and is treated with an additional quantity of lime and iron (10 grains of the former to 3 grains of the latter). The sludge that remains is sent to sea in ships. There are six steamers, each carrying 1,000 tons, and they make eleven trips a week each; this is for the two outfalls, northern and southern. The ships go to the "Barrow Deeps," where they discharge while turning round, usually over a distance of about ten miles. The amount of sludge sent to sea last year from the northern outfall works averaged 31,000 tons per week.



## FIRE EXHIBITION AWARDS.

THE jury of the International Fire Exhibition at Earl's Court, consisting of twenty-four home members and eight foreign members, has issued its awards for the several exhibits. Diplomas were granted for general excellence and ability, and special awards for specific exhibits of particular interest. In Group 1, Fire Prevention, the following awards were made for general excellence and utility:—

*Class 1.—Building Construction.*

| | |
|---|---|
| Columbian Fireproofing Co. | Gold medal. |
| Millar's Karri and Jarrah Forests, Ltd. | do. |
| British Uralite Co., Ltd. | Silver medal. |
| Homan and Rodgers | do. |
| J. A. King & Co. | do. |
| Patent Impervious Stone Co. | do. |
| Prüss'sche Patentwände, Berlin | do. |
| Stuart's Granolithic Stone Co. | do. |
| Van der Vygh Brothers, Amsterdam | do. |
| A. E. Brown | Bronze medal. |
| F. Dashwood | do. |
| Geh. Eggert, Berlin | do. |
| Mueller, Marx & Co., Berlin | do. |
| R. B. Roxby | do. |
| Rud. A. Stoffert, Glasgow | do. |
| Terrast Baugesellschaft m. b. H. Berlin | do. |
| Jabez Thompson | do. |
| Visintini & Weingärtner, Zürich | do. |

*Class 2.—Building Equipment.*

| | |
|---|---|
| Ratner Safe Co. | Gold medal. |
| The Shannon, Ltd. | do. |
| St. Pancras Iron Works Co. | do. |
| Clayton Fire Extinguishing and Ventilating Co., Ltd. | Silver medal. |
| Franz Scherrer, Bohn | do. |

*Class 3.—Electrical Safeguards.*

| | |
|---|---|
| Simplex Steel Conduit Co. | Gold medal. |

*Class 4.—Heating Safeguards.*

| | |
|---|---|
| J. B. Schroer, Dortmund | Bronze medal. |

Among the awards in—

*Group 3, Classes 1 and 2—Fire-Alarms, Telephones and Telegraphs*—were

| | |
|---|---|
| The General Electric Co. | Gold medal. |
| Bergmann Electrical Works | Bronze medal. |

Among the six awards in Group 12, general exhibits, were—

| | |
|---|---|
| Drew-Bear Perks & Co., Ltd. | Gold medal. |
| J. H. Heathman & Co. | Silver medal. |
| Marmorite | Bronze medal. |

*Group 2, Class 3.—Fire Stations and Equipments.*

| | |
|---|---|
| Woodhouse, Willoughby & Langham, Manchester | Silver medal. |
| Mawson & Hudson | do. |
| F. D. Lacey, borough engineer, Bournemouth | Bronze medal. |

*Group 9, Class 3.—Art.*

| | |
|---|---|
| L. Hoffman, city architect of Berlin | Gold medal. |
| Julius Jacob, Berlin | Silver medal. |
| Crown Surveyor Jaffé | do. |
| Prof. Kallmorgen | do. |
| May Maijx, Berlin | do. |
| H. W. Maage | do. |
| D. Riesch | do. |
| R. Phenè Spiers, F.S.A. | do. |
| Hugo Wolff Maage | do. |
| J. W. Blyth, London Salvage Corps | Bronze medal. |

Among the awards in Group 10, Scientific and Social, were—

| | |
|---|---|
| The British Fire Prevention Committee | Gold medal. |
| The Lightning Research Committee | Silver medal. |

Among the special awards were:—

| | |
|---|---|
| *Fire-Resisting Roofs.* | |
| Columbian Fireproofing Co. | Gold medal. |
| *Metal Lathing.* | |
| New Expanded Metal Co. | do. |
| *Fire-Resisting Doors.* | |
| T. G. Grimsley (Curfew Armoured Fire Door Co.) | Silver medal. |
| *Fire-Resisting Glass.* | |
| Pilkington Brothers, Ltd. | do. |
| *Fire-Resisting Windows.* | |
| George Hayes, New York | do. |
| *Automatic Fire-Alarm Systems.* | |
| Pearson Fire Alarm, Ltd. | Gold medal. |
| Siemens Electrical Appliances Co., Ltd. | do. |
| May-Oatway Fire Appliances, Ltd. | Silver medal. |

In class 2, laboratories, the British Fire-Prevention Committee's Testing Station was awarded a gold medal, and a similar award was made to the Metropolitan Asylums Board for general exhibits in Group 12.

## A PARISH HALL AND INSTITUTE.

ST. PAUL'S PARISH HALL AND INSTITUTE, Middle Lane, Winchmore Hill, London, N., of which a perspective and the plans are here reproduced, is now being erected. It is to be opened for the use of the parish next month. In the basement there will be a drill-hall, to be used as a gymnasium, with dressing-room. The ground floor contains a concert-hall to seat 400 persons, entered through a crush-hall, out of which are the ladies' and gentlemen's cloak-rooms. At the opposite end of the hall is a platform, with dressing-rooms at the back. The west wing contains a church-room and a girls' club and play-room. A large kitchen is provided which, while conveniently situated for serving the hall and basement, has a separate outside entrance in the event of cookery classes being held there. On the first floor is the men's club, consisting of reading-, play- and billiard-rooms. The caretaker's rooms are situated over the west wing. Care has been taken that all departments of the building—girl's club, men's club, church room, hall and drill-hall—have separate outside entrances. The floor of the hall is a wooden one, for dancing. The exterior of the building is of local red brick, with Monk's Park Bath stone dressings, the roof being covered with Empire green slates. The heating throughout is of hot water by Messrs. Haden. The fireproof floors and partitions are by Messrs. Bank's Fireproof Syndicate. The steps and landings throughout are Messrs. Bennett's granolithic stone, and the lead-light glazing to crush-hall screens is the work of Messrs. William Morris & Co. The carving to main entrance is by Mr. Gilbert Seale. The works are being carried out by Mr. Albert Monk, of Lower Edmonton, from the designs of Messrs. A. R. Barker & Son, architects, 11, Buckingham Street, Strand, W.C.

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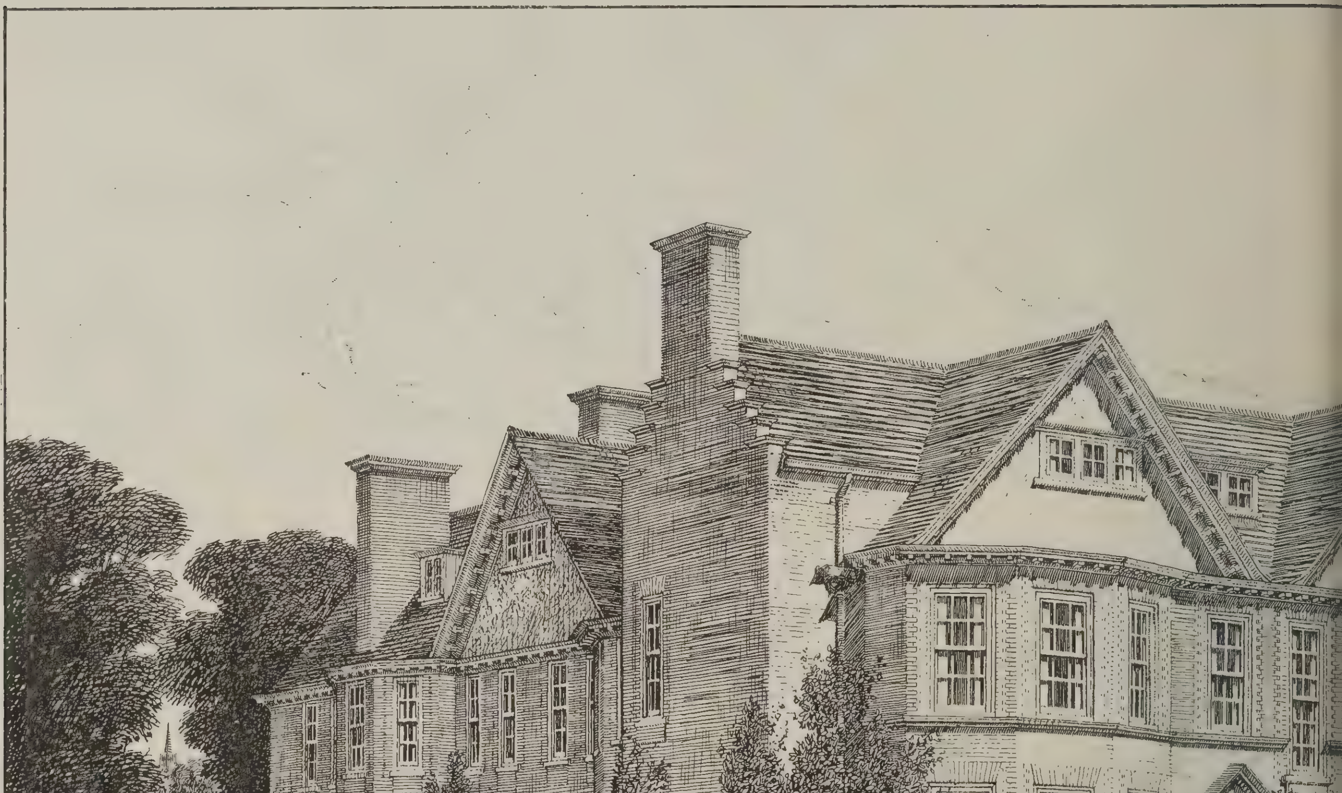
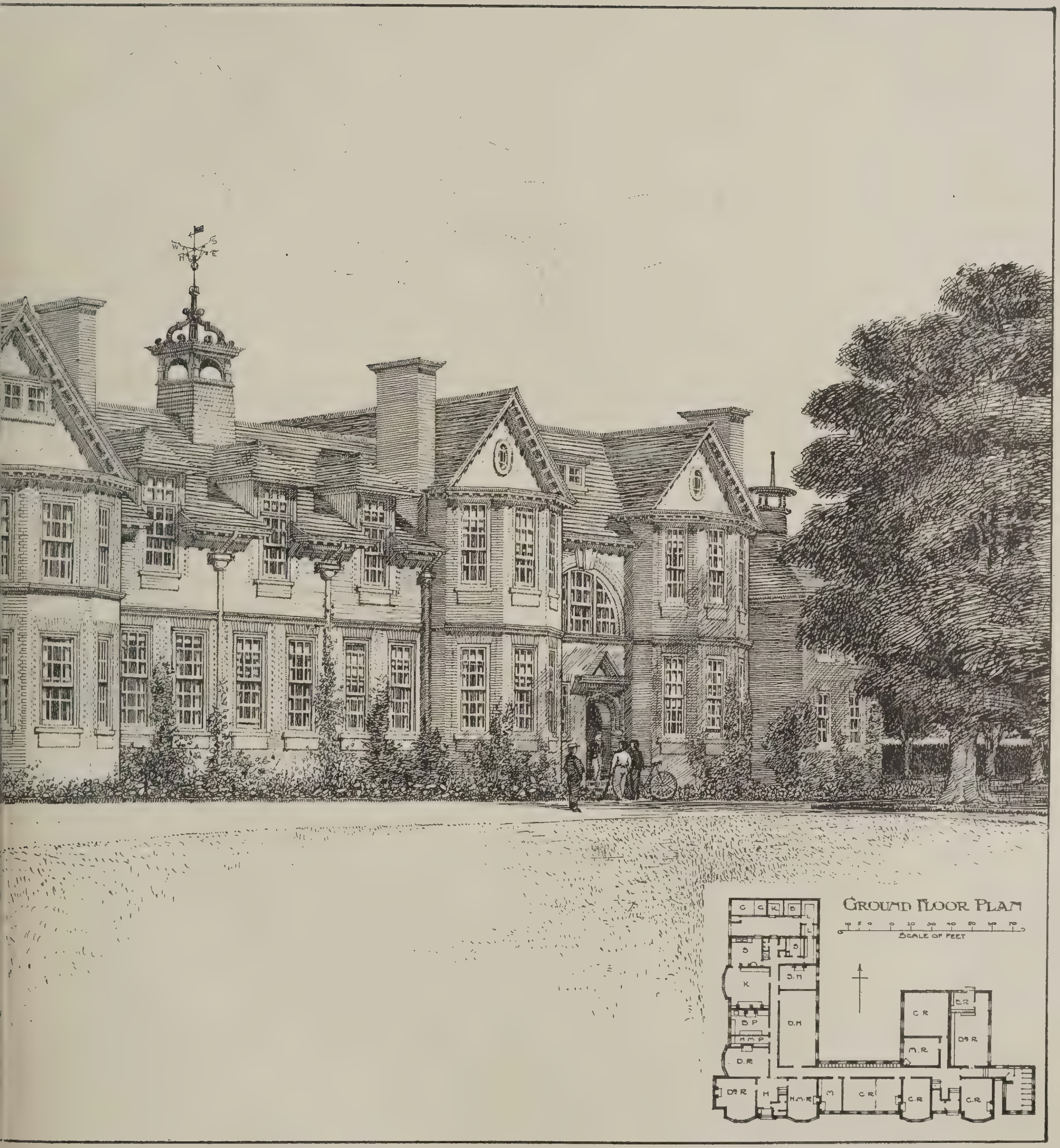
*Supplement to*
The Builders' Journal and Architectural Record.
*Wednesday, September 23rd, 1903.*


Geoffry Lucas. 1902.
Orley Farm School ~ Harrow ~
Arnold Mitchell. Architect ·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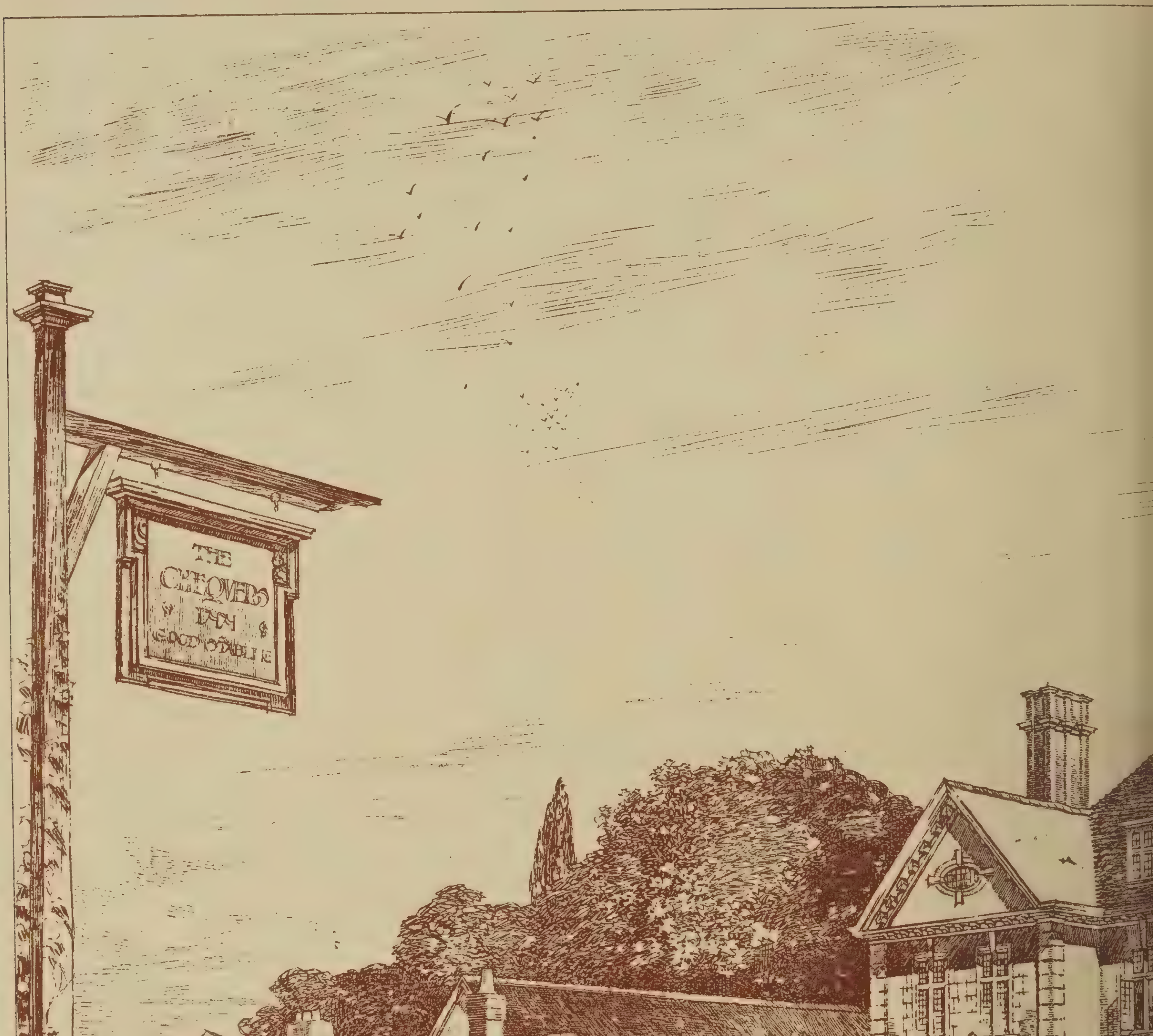

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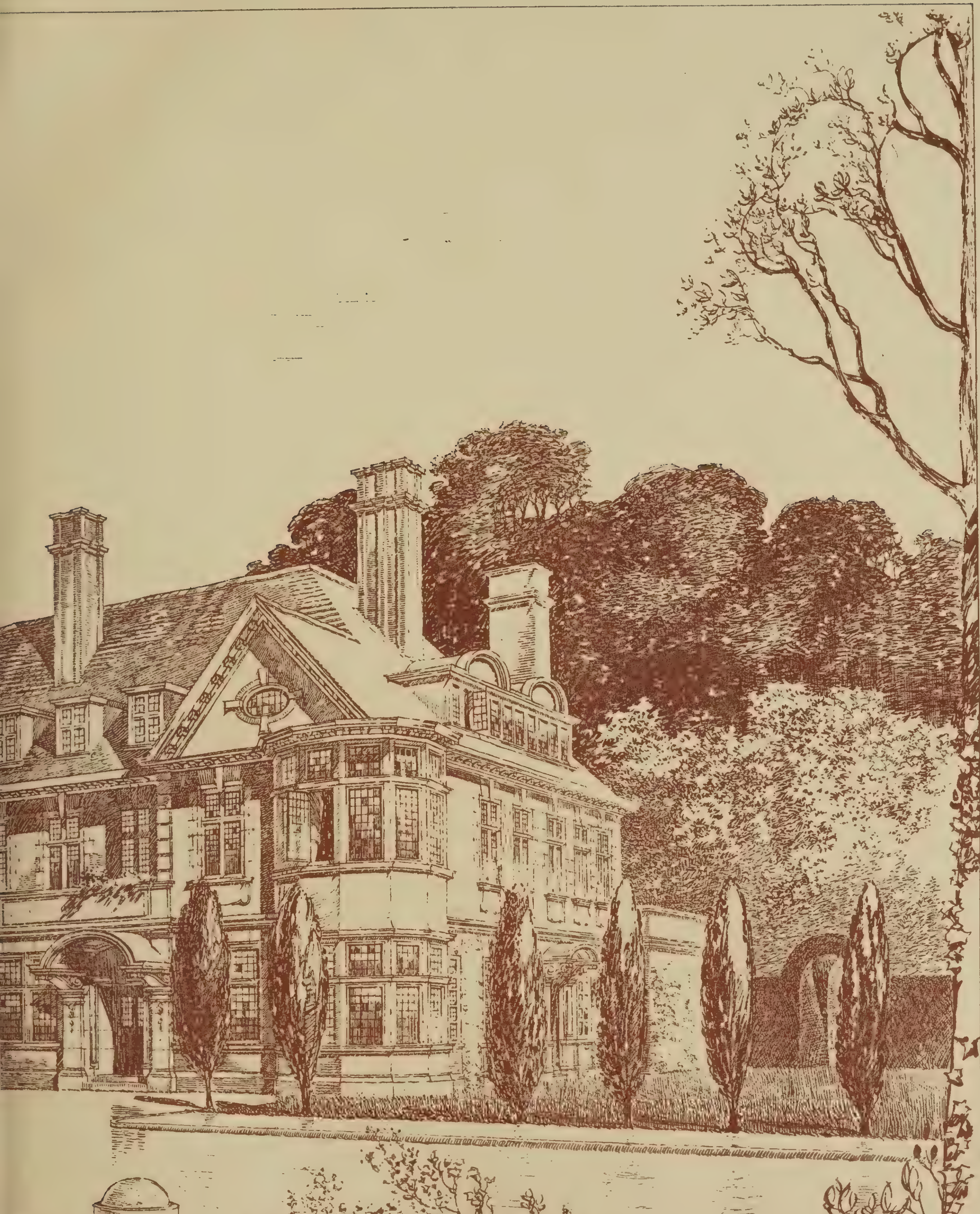

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## SUGARED TIMBER.

### A New Process.

MR. W. POWELL in a paper which he read before the British Association ast Wednesday said he proposed to show ow some kinds of timber at present value-ess might become exceedingly useful; how imber used for structural purposes might be o strengthened as to bear a much greater oad or strain; how streets might be heaply paved with sanitary wood-blocks vhich would neither absorb surface-water or give out disagreeable effluvia; how the avages of dry-rot might be combated; and ow all this might be done simply and at omparatively small cost.

Seasoning timber, either by natural or artificial means, tended to impair its strength by reducing its specific gravity, and this was especially the case in timber rapidly dried by artificial means.

He had found that by boiling timber in a thin saccharine solution until most of the air in the timber was exhausted, and then by leaving the wood in the syrup to cool, a certain amount of the sugar was absorbed by the timber, in some cases so much as to cause the timber to sink. After the wood had become sufficiently saturated it was put into a drying stove and the moisture driven off at a fairly high temperature until the wood was thoroughly dry-seasoned, as the term went. It was then ready for immediate use.

This process differed from others mainly in the fact that before drying was attempted the interstices of the timber were filled with a viscid glutinous solution that took the place of the natural sap and air which the wood has been forced to part with. So, when the moisture was driven off by stoving, the sugar which remained in the wood acted like a strong binder, and held the fibres together, just as cement or mortar bound the stones or bricks in a wall.

### Useless Timber made Valuable.

He was informed by Dr. Herman von Schrenk, the head of the Forest Products Branch of the United States Forestry Department, that there were thousands of square miles of land in the States covered with timber which at present was of little or no commercial value; and the same might also be said of Canada and most other timber-producing countries. These useless trees might aptly be called the weeds of the timber garden. Most of them were too weak, too sappy, too porous and were so liable to rapid decay as to be not worth cutting down. In some respects they were similar to our English poplar, and, like it, grew very quickly. This class of timber was especially amenable to the process he had described, and the results were somewhat astounding.

Poplar absorbed more than two-and-a-half times its own weight of the solution, and when thoroughly dried was 75 per cent. heavier than in its natural state. If this could be effected with our English poplar there was every reason to believe the same results might be obtained with the soft woods of America and other countries, and so a fresh source of supply of timber most suitable for railway sleepers, paving blocks, planks for piers, stations, &c., might be opened up.

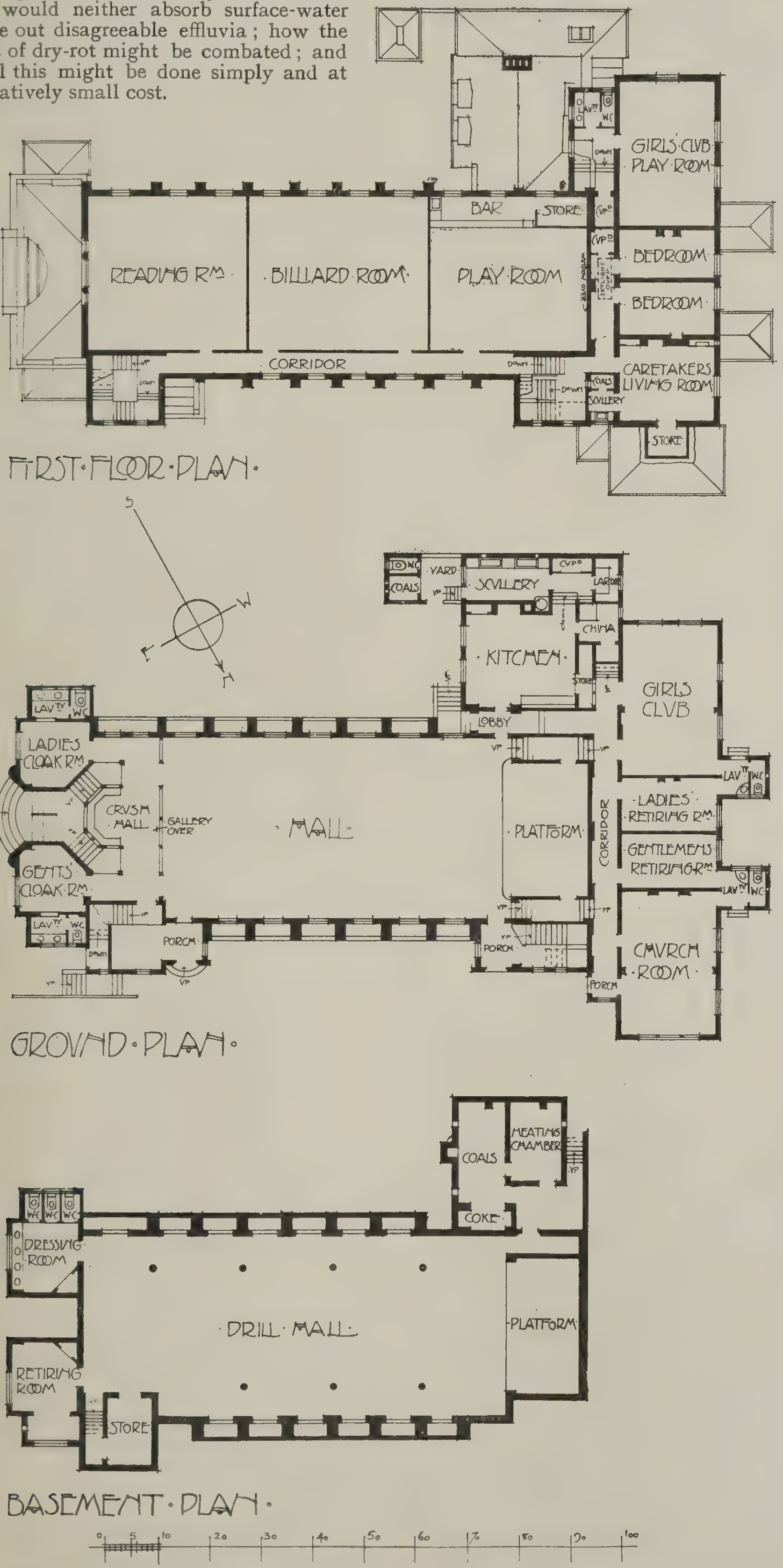
### Street Paving.

Everyone was aware of the power of wood pavements to emit stifling effluvia, especially on a hot close summer night. The excreta absorbed by the block, and thus evaporated, made it a perpetual source not only of discomfort but possibly of ill-health. If the good qualities of soft wood could be retained, while making it not only harder and tougher, but above all less absorbent, then one of the great difficulties of the municipal engineer would have been solved. While the weight of pine was not much increased by the process, its effects on the strength of the wood were remarkable. Experiment showed that the tensile strength of pitch-pine was increased from 14 to 32 per cent.; of white pine, from 29 to 39 per cent.; of yellow pine, from 56 to 107 per cent.

### Increased Fire-Resistance.

Tests as to the effect of the process on the flammability of wood, especially such as the pines, showed that it made the wood less inflammable, by reason of its greater compactness and solidity. Beech came next to poplar in its greediness for syrup, and its weight was increased in treatment by about 50 per cent. It became a very firm tough timber, nearly as tough as oak or teak, without having their brittleness.

As to the cost of the process, sugar was a very cheap raw material, being only about the same price, weight for weight, as the lower-priced woods, and if the by-products of sugar manufacture were used the cost would be almost nominal. The amount of labour involved in the process was comparatively small and the plant simple.



ST. PAUL'S PARISH HALL AND INSTITUTE, WINCHMORE HILL, LONDON, N.

# Keystones.

**The L.C.C.'s new Fire Station at Vauxhall** is now practically finished, and will be opened next month.

**In the New Gaiety Theatre,** now being rapidly completed, there will be a clear space of 12in. between the rows of seats. There are twelve boxes.

**Three Open-air Swimming Baths** are proposed to be constructed at Bristol—the sites being at Eastville Park, Bedminster Park and Victoria Park. They are estimated to cost £7,840.

**A new Public School at Linlithgow** has been erected to take the place of the Old Burgh School, at a cost of about £5,000. Mr. William M. Strott, Linlithgow, was the architect.

**Restoration of Glasgow Municipal Buildings.**—At a recent meeting of the Glasgow Corporation it was stated that up till now about £8,000 had been spent on the restoration of the walls of the Municipal Buildings, and about £5,000 more will be required.

**The A.A. Brown Book** has just been issued, price 1s. The committee reports that the past session was successful in every respect. The membership of the Association again shows an increase, and now numbers 1,512. The general fund account shows a balance of £878.

**Southwark Bridge.**—The Corporation have decided to reconstruct and lower Southwark Bridge by 7ft. or 8ft., and to raise the level of Upper Thames Street at the intersection with Queen Street to a height not exceeding 3ft., at an estimated cost of £350,000. Details of the scheme were given in our last week's issue.

**The Temple Church.**—It is understood that the Benchers of the Inner and Middle Temples are experiencing considerable doubt as to the expediency of expending the large sum of money required for the suggested restoration of the Temple Church, which includes the rebuilding of the turret and steeple, and the restoration of the doorway and arches.

**A new Baptist Church and Schools at Brighton** are being erected in Gloucester Place. The buildings will be faced with whole white flints, with red dressings. The accommodation will be for 443 adults on ground floor, 282 in galleries, total 725, or a mixed congregation of over 800 persons. The seating is arranged on a semi-circular plan. The architects are Messrs. George Baines, F.R.I.B.A., and R. Palmer Baines, 5, Clement's Inn, Strand, London, W.C. The builders are Messrs. Battley, Sons & Holmes, 21, Old Kent Road, London, S.E. The present contract is for £5,381, exclusive of galleries (except choir gallery).

**Prizes for Designs for Furniture.**—The council of the Society of Arts holds a sum of £400, the balance of the subscriptions to the Owen Jones Memorial Fund, presented to them by the Memorial Committee, on condition of their spending the interest thereof in prizes to "students of the schools of art who, in annual competition, produce the best designs for household furniture, carpets, wallpapers and hangings, damasks, chintzes, &c., regulated by the principles laid down by Owen Jones." The prizes will be awarded on the results of the annual competition of the Board of Education, South Kensington. Competing designs must be marked "In competition for the Owen Jones Prizes." No candidate who has gained one of the above prizes can again take part in the competition. The next award will be made in 1904, for which six prizes are offered in competition, each prize to consist of a bound copy of Owen Jones's "Principles of Design" and the Society's bronze medal.

**A new Wesleyan Central Hall at Birmingham** has been erected from designs by Mr. Ewen G. Harper, architect. Mr. John Bowen was the builder.

**Norfolk County Asylum.**—Extensive alterations and additions to this asylum at Whittingham have just been completed. Mr. Alfred J. Wood was the architect and Messrs. W. King & Son, of Westminster, were the building contractors.

**In Crathie Parish Church** a memorial to Queen Victoria was unveiled last Sunday by His Majesty the King. The bust is the work of Herr Emil Fuchs, while the niche, canopy and bracket were designed by Mr. A. Marshall Mackenzie, architect, of Aberdeen.

**The Renovation of the Albert Memorial** in Kensington Gardens is now nearly completed, and the elaborate scaffold is being pulled down. The work is finished as far as the cornice and base, from which springs the minaret, with its tiers of angelic figures. The entire work will be completed in about six weeks, but as yet it cannot be stated whether the completion of the work will be celebrated by any public ceremonial.

**At the St. Louis Exhibition** a tower is to be erected which will be the highest in the world. It is to be a pharos, or round column, constructed entirely of steel, 350yds. high. Round the outside walls a railway will be fixed corkscrew fashion, up which an enormous carriage will convey over 800 passengers at once to the top; while inside the tower immense lifts will be continually going up and down for those who prefer that mode of travelling. The cupola at the top will hold 7,000 people.

**Mr. William H. Maxwell, A.M.I.C.E.,** borough engineer of Tunbridge Wells, has been selected to give one of the national engineering and trade lectures—an important scheme to benefit British trade in the colonies and abroad. The subject allotted to Mr. Maxwell is "British Progress in Municipal Engineering." The lecture will review the advances that have been made in all departments of municipal engineering work, and include some account of the leading features of the latest machinery, appliances, materials and inventions falling within the scope of the subject of the lecture, and illustrative of the great progress Great Britain has made in this wide field of activity.

**Architecture in Leeds.**—The Leeds and Yorkshire Architectural Society has initiated a new departure in forming what is practically a school of architecture in the shape of day and evening classes at the Leeds School of Art. These have been framed with the definite object of preparing students for the examinations of the Royal Institute of British Architects. In the final course, problems will be set in the designing of various kinds of buildings, and these will be criticized by visitors nominated by the Leeds and Yorkshire Architectural Society, similarly to the course followed in the Architectural Association classes. The fees are low. The classes are under the direction of Mr. F. Musto, A.R.I.B.A., and will commence next month.

# Obituary.

**Mr. John Guthrie,** architect, of Hawick, died recently.

**Mr. H. D. Cripps,** consulting engineer of Caton, Lancaster, was killed by a bicycle accident last week.

**Mr. Joseph Brown,** contractor, of Hackney, was assisting his men in loading a van with timber at King's Cross goods station on Saturday last, when some of it slipped and fell on him. He sustained injuries to his head from which he died.

**Mr. John Lyon,** builder and timber merchant, &c., of Fyvie, Aberdeenshire, died recently at the age of sixty-eight years. Deceased early acquired a knowledge of carpentry, and during his life conducted a successful business in that line, uniting with it the work of a sawmill; and still later he did a large amount of service as a traction engine proprietor. About thirty-five years ago he took over the sawmills in the neighbourhood of Fyvie Station, which had been formerly in the hands of the late Mr. James Mackie, Lewes.

# Law Cases.

**Contractors overloading their Carts.**—At the North London Police Court last Friday Mr. Cluer was occupied for a considerable time in hearing summonses taken out by the Islington Borough Council against the Great Northern, Piccadilly and Brompton Railway Co. for permitting a dangerous littering of the roads of Islington. Evidence was called to show that on fifteen separate days in July and August the carmen carting away the clay taken from the railway borings at Holloway overloaded their carts and allowed large pieces of the clay to fall on to the roadway. Several samples of the lumps of clay were produced in court, one measuring about 2ft. by 18in. and weighing about 30lbs. The defendants pleaded non-liability, on the ground that they had given the work to a firm of contractors, Messrs. Walter Scott & Middleton, and these in turn had sublet the cartage to Messrs. Cattermole, Messrs. Jackson and Messrs. Williamson. Mr. Cluer said this did not relieve the railway company from liability, because they should have seen that the contractors did their work properly. He should impose the full penalty of 40s. on each of the twelve summonses, with £5 7s. costs—in all £29 7s.

**Concrete Floors in London Flats: Important Innovation.**—At the West London Court last Wednesday Messrs. Flew & Son, builders, of Fulham, were summoned at the instance of Mr. F. W. Hamilton, district surveyor, for committing certain irregularities in the construction of a block of flats in Edith Villas, West Kensington. Mr. John Haynes, who supported the summons, said the Building Act required that all the floors and staircases of buildings which consisted of separate sets of chambers and offices adapted for the occupation of different persons should be constructed of fire-resisting material. In this case the defendants had simply laid down wooden joists on the ground floor, and it was most essential for the protection from fire of dwellers in such flats that that section of the Act should be rigidly enforced. The district surveyor called the attention of the builders to the irregularity, but instead of remedying the defect they went on more vigorously and completed the building. Mr. Hamilton admitted in evidence that all the upper floors of the flats were properly constructed of wooden joists filled in with concrete.—Mr. Blanco White (for the defence): You have passed other flats erected by the firm in which the ground floors have been constructed in a similar fashion to these in Edith Villas?—Witness: Yes; but my opinion was changed after the recently held meeting of the District Surveyors' Association.—The Magistrate: I suppose you had considered that concrete flooring was unnecessary on ground floors because there was no draught, as in upper floors.—Witness: That is so.—The magistrate observed that no doubt the suddenly altered interpretation put on that section of the Act by the surveying authorities had placed the defendants and other builders in a difficulty, but the Act must be obeyed. He adjourned the case to enable the defendants to comply with the regulations.

# FRESH DISCOVERIES IN CRETE AND EGYPT.

### Announcements by Mr. Arthur Evans and Prof. Flinders Petrie.

BEFORE the British Association last week Mr. Arthur Evans and Prof. Flinders Petrie made announcements in regard to their excavations in Crete and Egypt.

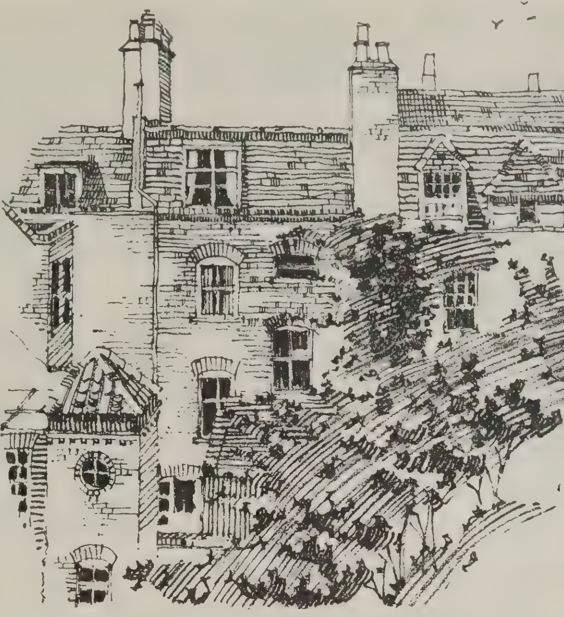
Mr. Evans said it had seemed possible that this year's campaign in the prehistoric palace at Knossos might have definitely completed the work. But the excavations had taken a wholly unlooked-for development, productive of results of first-rate importance both on the architectural and general archæological sides, and calling still for supplementary researches of considerable, and at present incalculable, extent. The search for the tombs, principally carried out in the region north of the palace, had only resulted in the discovery of a necropolis of secondary interest in a much destroyed condition. At the same time remains of houses were brought to light, going back to the earliest Minôan period and proving the continuous extension of the prehistoric city for a distance of over a quarter of a mile north-east of the palace. At its north-western angle the palace area itself had gained a monumental accession, for the excavations had brought to light a paved court with two tiers of limestone steps and a raised square platform; and this could only be regarded as the royal theatre, which would have seated about 500 spectators. Between this and the west court of the palace an area was explored containing a very complex mass of constructions representing at different levels every age of Minôan culture, and apparently belonging to a sanctuary connected with the Cretan cult of the Double Axe and its associated divinities.

### A Cretan Town.

Mr. Bosanquet read a second paper on "Exploration in the East of Crete." He said that the fourth Cretan campaign of the British School at Athens lasted from March to June, 1903. The excavation of the settlement discovered last year at Roussolakkos had been continued, and it had proved to be a considerable town regularly laid out in streets and blocks. The streets were narrow, from 5ft. to 12ft. wide, well paved, with a raised footpath at one side and a deep gutter at the other. One main street had been cleared for more than 150yds. Each block had a frontage of from 120ft. to 180ft., and contained three or more houses. The general plan of the town and parts of the houses dated from the latter part of the Kamáres period, but there was extensive rebuilding during the Mycenæan period. House fronts in ashlar masonry, bathrooms, drainage arrangements and a great variety of domestic utensils indicated widespread prosperity and comfort.

### The Art of the Dynasties.

Professor Petrie's first lecture was entitled "The Beginning of the Egyptian Kingdom." He said that the rise of the dynastic power had been brought to light in the remains of the royal tombs of the first and second dynasties which he had excavated at Abydos in 1900 and 1901. The art of the dynastic people was entirely different from any of the prehistoric age, though it united with it and took over some features of it. Broadly, the pre-dynastic peoples were mechanical and the dynastic race was artistic; and even in the earliest works of the kings there was an ability of the best style, though still archaic. By the end of the reign of Mena, and under his successor, the artistic types had become fairly fixed, and they remained the patterns to which the Egyptians recurred at each successive renewal of art during 4,000 years. The most completed stage was in the middle of the first dynasty; and at its close there was certain degradation. The state of art between the first and fourth dynasties was not yet clear; it seemed to have become conventional, and probably devitalized, until it made a fresh start with the great expansion of activity under the pyramid builders.



GEORGIAN HOUSES
AT WESTMINSTER.
SKETCH FROM NO. 12,
LITTLE COLLEGE STREET.

### How the Pyramids grew into Being.

The royal tombs of the early kings were enlarged forms of the prehistoric graves. A pit in the ground had, during the prehistoric age, been improved on by making it a large chamber, lined with mats, roofed with timber and brushwood, and furnished with an abundance of vases and other objects. The earliest royal tombs were much the same, only lined and floored with timber; the offerings being dropped in between the timber lining and the side of the pit. Then regular cells were built for the offerings; next a row of small chambers apart from the tomb; and, lastly, an elaborate series of store chambers of various sizes. The tomb originally had an entrance, then a sloping hole led to it, next a stairway, and, lastly, a long sloping passage as in the pyramids. The outer form was at first a slightly raised heap over the roof of the tomb. This was next walled round to retain the earth; after that the walling was raised, and formed a block of brickwork with sloping sides on the early brick mastaba. This later became expanded by additions around it, and extension upward, so as to be a mass of concentric coats; and when translated into stone at the end of the third dynasty it suggested a pyramidal outline, and so originated the pyramid type.

### Abydos.

Professor Petrie's second lecture was on "The Temples of Abydos." He said that after Mariette had worked on the ground of the Osiris temple at Abydos he declared that nothing remained of the old temple, that even the foundations had been destroyed to the roots, and that any further research was impossible. From that very ground the work of the past winter had produced foundations of ten successive periods of the temple, one below another, occupying nearly 20ft. in depth of soil. The examination and recording of these buildings had required more than 4,000 measurements and 1,000 levellings. The site was continually re-used during 4,000 years. Each of these periods of building followed entirely different lines, and the successive plans had scarcely any relation one to another. The principal results were in the first dynasty. The school of fine ivory carving at that time showed work equal to any that succeeded it in later history. The appreciation of form, the delicacy of the muscular curves, and the power of expression were as good as in the best classical or Renaissance carvings. The art of glazing was applied to large wall-tiles, used for covering brick walls, and to vases, as shown by part of a large vase with the name of Menes. Hence glazing was as advanced at the beginning of the first dynasty, about 4700 B.C., as it was for 3,000 years later.

## Bricks and Mortar.

**Aphorism for the Week.**

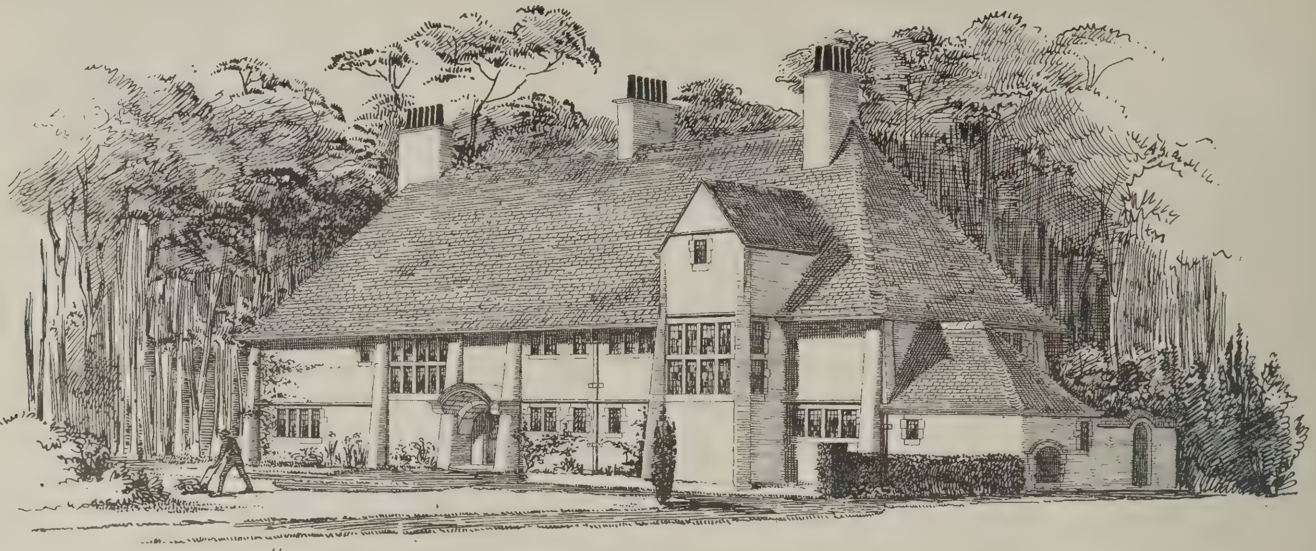
*Sculpture and painting are to architecture what the drama and poetry are to music—its derivatives, its necessary consequences.*

VIOLLET-LE-DUC.

**Our Plates.** BOTH drawings reproduced this week were exhibited at the Royal Academy. The drawing of the Chequers Inn, Haydock, Lancs, is by Mr. C. E. Mallows, and that of Orley Farm School, Harrow, by Mr. Geoffry Lucas.

**The Westminster Vandalism.** THE drawing reproduced above is by Mr. C. T. Armstrong. It shows the backs of some of the old Georgian houses which it is feared will be pulled down through the action of the Ecclesiastical Commissioners. We strongly condemned this on p. 333 of our issue for July 22nd last.

**The new Worcestershire Asylum.** THE new county asylum for Worcestershire now being erected at Barnsley Hall (1¾ miles north of Bromsgrove) from designs by Mr. George T. Hine, F.R.I.B.A., comprises a main asylum capable of accommodating 570 patients (254 males and 316 females), with administrative offices sufficient for an extended asylum for 1,000 to 1,200 patients. In addition to the patients' wards, the asylum will contain a large recreation hall, kitchens and offices, quarters for nurses and attendants, workshops, laundry buildings, and also offices for the visiting committee and staff, together with accommodation for assistant medical officers. The detached buildings comprise a chapel to seat 420 persons, a residence for the medical superintendent, an isolation hospital, eight cottages and an entrance lodge. Water is procured on the estate from two boreholes, each yielding 7,000 gals. per hour. The asylum will be lighted by electricity. The estimated total cost of the erection, furnishing and equipment of the buildings, which are to be completed by January 21st, 1906, is £215,887.



"VODIN," PYRFORD COMMON, NEAR WOKING. C. F. A. VOYSEY, ARCHITECT.

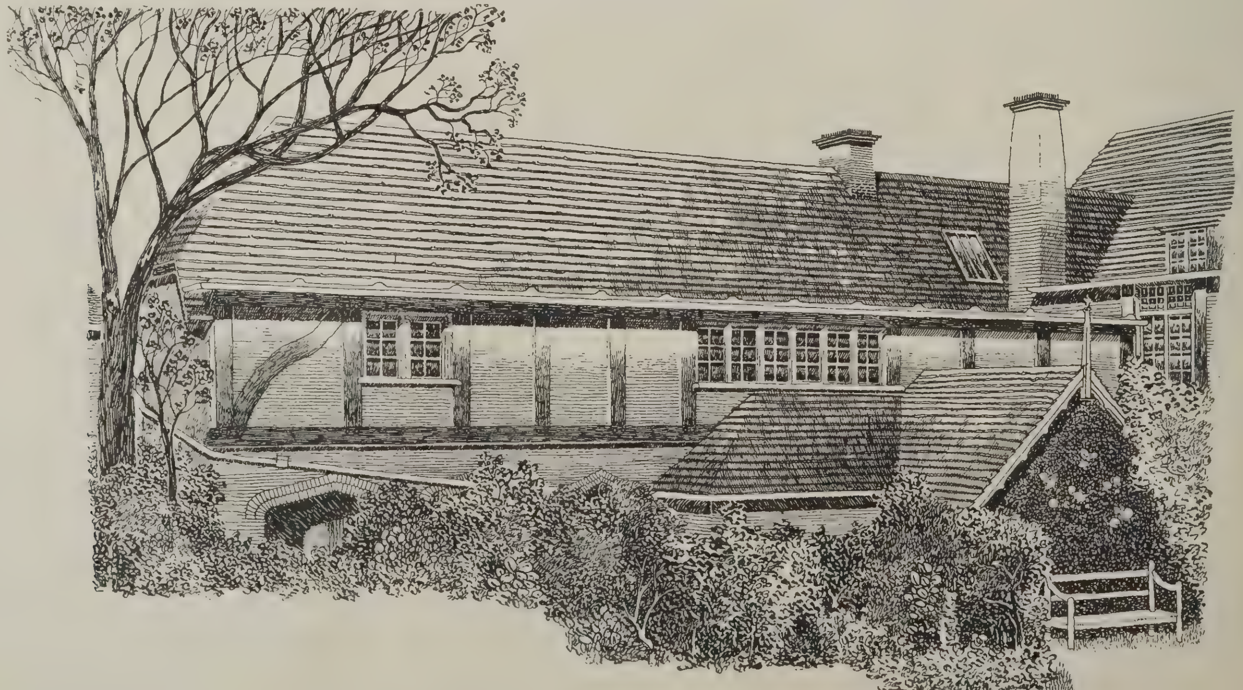
The amount of the estimates for building works (£185,637) shows an average cost of £325 per bed for 570 beds.

**"Vodin," Pyrford Common.** THE plans and elevations of this house by Mr. Voysey, of which a perspective is given above, were published as centre plates in our issue for May 20th last.

**Developing the Garden City.** IN a paper which he read before the British Association on the first garden city, to be erected at Hitchin, Mr. Harold E. Moore said that after the estate of about 4,000 acres came into their possession at Michaelmas the company would doubtless immediately erect a railway station, make roads, erect and fit a cement factory, open a chalk pit, equip gravel pits, and do other work which would render available the natural resources of the estate. The total cost would then probably be about £180,000. This would be an average of about £30 an acre for the land, excluding the buildings and works at a reasonable value. Two different courses of procedure would then be possible. The first method was to lay out a model town with avenues and parks and spend large capital in engineering work and buildings. It was suggested that this procedure would result in failure. The second method would be to attract residents on small areas by offering sites with existing frontages at a rent-charge, and also to encourage manufacturers to take land by giving them sites on that part of the estate suitable for manufacturing purposes, on condition that they took further areas at a rent-charge for the erection of cottages for their workpeople. These cottages would be erected by the manufacturer, the intending occupier, or by builders who conformed to the stipulated "Garden City" regulations. The company will have a capital of £300,000, made up of 59 400 ordinary shares of £5 and 3,000 of £1 each. The first issue will be 16,000 shares of £5 each to shareholders of the Pioneer Company, members of the Garden City Association, and others who have shown interest in the movement. There will be a public issue in a few months.

**Additions to an Old Manor.** THE additions to the Lee Manor, Great Missenden, Bucks, have recently been completed for Mr. A. Lasenby Liberty. Mr. A. Jessop Hardwick, of Kingston-on-Thames, was the architect. The new work was added on all sides of the old house, and has been executed on very simple lines. The roofs are covered with old tiles so as to harmonize with the old buildings. The frieze to the billiard-room is carried out in soft red mosaics, and the roof of this room and of the estate offices and studio are left open, with the timbers rough from the saw and stained. Mr. G. Parsons, of Great Missenden, was the builder. The sketch of the servants' wing reproduced below is by Mr. Sidney Castle. It was exhibited at this year's Royal Academy.

**The Amateur Architect.** THE gasworks at Broughty Ferry, Aberdeen, seem to be causing a deal of trouble. The retort house, which cost something like £3,000 more than was reckoned upon, is now said to be weak in foundation, a considerable portion of it being built on the wall of the old retort house, the foundation of which was never meant for a structure of the dimensions of the present building. Into the west wall the cylinder of the heavy machine for riddling coke has been fixed, the working of which, it is alleged, leads to certain sinuous motions of the wall that have raised visions of a catastrophe. In consequence the machine has been stopped for some time. It has been decided to seek counsel from the burgh surveyor.



ADDITIONS TO THE LEE MANOR, GREAT MISSENDEN, BUCKS: SERVANTS' WING FROM GARDEN. A. JESSOP HARDWICK, ARCHITECT.

## Electrical Notes.

**Carrying Bicycles on Tramcars.**—By means of swing brackets attached to each end of the car, arrangements have been made by the Huddersfield Corporation tramways manager to carry four cycles on each car at the owner's own risk.

**The Edison Battery.**—Mr. Edison is reported as having said that one of his batteries had been in operation for three weeks in a delivery wagon, and did all that he expected and claimed for it. The official test made of the new battery in the wagon showed that, while the old lead battery weighed 1,260lbs. and had a maximum of twenty-five miles, the Edison battery which replaced it weighed 650lbs. and drove the wagon 36·8 miles. Besides this, the old battery occupied 12·8 cub. ft., while the Edison took up only 8·5 cub. ft.

**To Supersede the "Cow-catcher."**—The "cow-catcher" is to be superseded on the Manchester electric tramcars. The Corporation is so satisfied with the Hudson-Bowring "gate and carrier" guards that it has given an order for 300 of them to Messrs. Hudson & Bowring, Ltd., of St. James's Square, Manchester. The principle of the guard is as follows:—The swing-gate which hangs below the "fender" of the car is so lightly balanced that at the least touch it falls inwards. In doing so it automatically opens a "toggle" or knuckle lever, releases an iron bar, and causes the horizontal carrier or cradle to fall to the ground. The cradle is pressed down upon the metals by a strong spring, and any obstruction is easily picked up and carried along until the car can be brought to a standstill. It is claimed that these guards render it practically impossible for anyone to be injured by the wheels or mechanism of the car.

**Faster Speed for Liverpool Tramcars.**—The Liverpool Corporation has received official sanction to an alteration of the speed of the electric tramcars. The average speed in the past has been 5·8 miles per hour between the termini. Under the new arrangement an average speed of eight miles, including stoppages, will be maintained. A series of records was recently taken of the running of cars, and it was found that on a typical route a speed of sixteen and seventeen miles an hour was obtained, the average speed, including stoppages, approximating eight miles an hour.

**An Incandescent Electric Lamp Trust** has been formed by the most important manufacturers of Central Europe. The trust is made for a period of ten years. A central depôt for the sale of lamps will be opened. The output of the works which form the syndicate amounted to 27,500,000 lamps last year. Among the German, Austrian and other works interested in the question are the Berlin General Electricity Co., which alone turned out 5,000,000 lamps in 1902; the United Electricity Co., of Vienna, which sold 4,000,000 lamps last year; the Siemens & Halske Co., of Berlin, Sturm & Co., of Vienna, and other factories.

**Tramway Developments around London.**—The Board of Trade has approved plans for the construction of electric conduit tramways from Camberwell Green to near the junction of Lordship Lane and Crystal Palace Road, as well as of a line at Denmark Hill connecting the above with the tramway through Coldharbour Lane.—The East and West Ham Councils have agreed to confer with a view to running powers being mutually granted in working each authority's electric tramway system. It is hoped that the proposed arrangement will be extended to Ilford, so as to provide for a through service of electric trams from Romford parish boundary to the boundary of the London County Council's area at Bow Bridge, and into the intersecting thoroughfares.

**Aluminium as an Electrical Conductor.**—Two papers on this subject were read before the British Association last week. The first was by Mr. J. B. C. Kershaw, who claimed to have proved that some of the aluminium rod and wire which was manfactured and sold in England for electrical purposes during 1899 and 1901 was not able to stand atmospheric exposure on the coast of Lancashire without corrosion. It was only a fair deduction from these exposure tests to assert that aluminium manufacturers had yet to prove the metal a satisfactory and durable substitute for copper in bare overhead transmission lines, or for electrical work which involved exposure to climates near the sea coast. The second paper, by Mr. Ernest Wilson, was on the electrical conductivity of certain aluminium alloys as affected by exposure to London atmosphere. Two series of tests had been made. A copper aluminium alloy had not diminished in conductivity to a greater extent than copper, but further exposure had a detrimental effect. The author concluded that copper alone should not be used in comparatively large quantity for exposed light aluminium alloys.

## New Companies.

E. Eagland & Sons, Ltd., carpenters, joiners, cabinet makers, builders, stone merchants and contractors, &c. Capital: £5 000 in £5 shares.

Thomas Vale & Sons, Ltd., contractors for public works, builders, brick and tile manufacturers, timber and slate merchants, &c., 9 Lombard Street, Stourport. Capital: £15,000 in £5 shares (1 000 preference).

Axminster Development Syndicate Ltd., to acquire lands for building, builders, contractors, decorators, &c.; Trinity Square, Axminster. Capital: £3,000 in £50 shares.

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65 & 67, Bothwell Street,
GLASGOW.

76, Woodhouse Lane,
LEEDS.

## Builders' Notes.

**The Infectious Diseases Hospital, Scarborough,** has been supplied by Messrs. E. H. Shorland & Brother, of Manchester, with their patent double-fronted Manchester stoves with descending smoke flues, patent Manchester grates, exhaust roof ventilators, outlet panels and special inlet ventilators.

**Firebricks for Russia.** — The British Consul at St. Petersburg states that although certain quantities of firebricks are imported into Russia from the United Kingdom, they are gradually being driven out of the market by Germany, by means of long credits, lower prices and direct business with the consumers.

**Fireproof Floors.**—The Columbian Fireproofing Co., Ltd., 37, King William Street, E.C., are constructing the fireproof floors at the Hospital for Consumption, Liverpool (Messrs. Grayson & Ould, FF.R.I B.A., architects, Liverpool), and at the New Mission Hall, Bethnal Green (Mr. S. Clifford Tee, F.S.I., architect, 50, Moorgate Street, E.C.).

**Natural Gas in Sussex** is being used for many purposes. At Heathfield, between seventy and eighty houses have adopted it for lighting and heating, and it is also burnt in street lamps. Gas-engines are also being driven by it. Mr. R. Pearson said before the British Association last week that if it could be proved that there was a huge gas-field lying under the whole of the Weald, it would revolutionize the industrial life of the south of England.

**Mr. Robert Boyle,** of Messrs. Robert Boyle & Son, the well-known ventilating engineers of London and Glasgow, has recently returned from what constitutes his eighth sanitary crusade around the world. His object has been to advocate the adoption of hygienic measures among the peoples of the many countries he has visited. It will be remembered that on the occasion of his Majesty's coronation last year Mr. Boyle gave the magnificent sum of £100,000 towards promoting the teaching of hygiene in the schools and colleges of the Empire.

**Newcastle Builders' Labourers.**—A deputation representing the Labourers' Union waited on the Newcastle Corporation recently with reference to the wages allowed to their members for demolishing houses on the quayside for the purpose of widening that part of the city. At present the corporation were paying 5¾d. per hour, whilst for similar work, it was declared, the Master-Builders' Association of the city were paying 6½d. per hour. On the other hand, the city engineer intimated that he was informed 5¾d. per hour was the standard wage. It was decided by the committee to make enquiries of the Builders' Association, and ascertain definitely what really was the amount paid by the members for the work.

**Twenty-five Years' Progress in Refuse Disposal.**—With this title Mr. W. Francis Goodrich read a paper before the Engineering section of the British Association last Wednesday. He said that out of a total of 180 towns in this country where refuse destructors had been erected sixty-three were used in combination with electricity works. In Liverpool destructors were being erected to supply the source of power for electric traction. In Nottingham, Wolverhampton and Preston steps had been taken in the same direction. At Nelson 40 Board of Trade units were generated from each ton of refuse destroyed. The vital improvement in destructors was the introduction of high-temperature working, which rendered nuisance practically impossible. Destructors had been combined with sewage works in forty towns, with highly satisfactory results. Those at Weymouth were within five minutes' walk of the centre of the town, and it was estimated that by destroying the refuse there a saving of £234 a year on cartage alone would be effected.

**Associated Portland Cement Manufacturers (1900), Ltd.**—The report of the directors for the year ending June 30th, to be presented at to-day's general meeting of the company, states that the profits have been £33,587 more than for the previous year, and would have been very much larger had there not been the continued fall in the selling price of Portland cement. The cause of this fall was chiefly the importation of cheap foreign cements. The directors recommend a final dividend on the preference shares at the rate of 5½ per cent. per annum, amounting to £59,442. Upwards of 220,000 tons of cement have been produced by the company's new rotary kiln plant at Swanscombe since its erection. An installation has just been completed at the Arlesley works, and another plant is being erected on the Thames.

## Coming Events.

**Wednesday, Sept. 23.**

Sanitary Institute (Lectures and Demonstrations for Sanitary Officers, Part I.).—Mr. J. Priestley on "Sanitary Law"—I., at 7 p.m. Inspection and Demonstration in the "District of Islington and at the Borough Disinfecting Station," at 2 p.m, conducted by James R. Leggatt.

Cut-Nail Manufacturers' Association.—Conference at 3 p.m. Dinner at Trocadero Restaurant at 6 p.m.

**Friday, Sept. 25.**

Sanitary Institute (Lectures and Demonstrations for Sanitary Officers, Part I.).—Mr. J. Priestley on "Sanitary Law"—II., at 7 p.m.

Institute of Sanitary Engineers.—Examination in Practical Sanitary Science in London and Manchester (first day).

**Saturday, Sept. 26.**

Sanitary Institute (Lectures and Demonstrations for Sanitary Officers Part I.).—Inspection and Demonstration at Southwark and Vauxhall Water Works, Hampton, at 2.30 p.m.

Institute of Sanitary Engineers.—Examination in Practical Sanitary Science in London and Manchester (second day, concluded).

**Monday, Sept. 28.**

Sanitary Institute (Lectures and Demonstrations for Sanitary Officers, Part I.).—Mr. J. Priestley on "Sanitary Law"—III., at 7 p.m.

**Wednesday, Sept. 30.**

Sanitary Institute (Lectures and Demonstrations for Sanitary Offices, Part I.).—Mr. J. Priestley on "Duties of a Sanitary Inspector"—I., at 7 p.m. Inspection and Demonstration at "John Knight & Sons' Soap Works," Silvertown, at 3 p.m.

## Bankruptcies.

[Abbreviations: R.O.—receiving order; P.E.—public examination; C.C.—county court; O.R.—official receiver; Adj.—Adjudication.]

During the week ending Sept. 19th twelve failures in the building and timber trades in England and Wales were gazetted.

W. E. Keys, builder, Tooting. R.O. Sept. 10th.

E. Messiter, builder, London, W. R.O. Sept. 9th.

R. Davies, builder, Conway. Gross liabilities £3.410; assets £168.

G. H. Hall, road contractor, Sheffield. Liabilities £2,6[illegible]7; assets £944; deficiency £1,772.

W. H. Shoplind, carpenter and builder, Blaenavon. P.E., Tredegar C.C., Nov. 6th, at 10.30.

T. Glover, builder and decorator, Eastbourne. R.O. and adj. Sept. 10th.

F. Ward, builder Leeds. Adj. Sept. 7th. P.E., Leeds C.C., Oct. 5th, at 11.

J. W. Harries, builder, Blaen Gwynfi. R.O. and adj. Sept. 7th.

G. W Sotherhan, builder and contractor, West Hartlepool. P E, Sunderland C.C., Oct. 8th, at 11 15.

J. Ashton, builder, Whitton, near Hounslow. R.O. Sept. 11th.

F. H. Brook. brick-merchant, London, E.C. R O. Sept. 11th. First meeting, Bankruptcy Court, Sept. 24th, at 12. P.E., same, Nov. 4th, at 12.

T. Hughes, joiner, builder and contractor, Birkenhead. First meeting, O.R.'s, Liverpool, Sept. 23rd, at 2.30. P.E., Birkenhead C.C., Oct. 7th, at 11.

J. Rawlins, builder, Upper Walthamstow. Liabilities £10,945; £2,188 expected to rank for dividend; assets £1,592.

G. H. Tebbutt, builder and house decorator, Maida Vale. R.O. and adj. Sept. 10th. First meeting, London Bankruptcy Court, Sept. 23rd, at 11. P.E., same, Nov. 3rd, at 11.30.

The following companies are to be wound up:—

Bedlington Brick Co., Ltd.

Derby Tile Co., Ltd., Derby.

Noiseless Flush Cistern Co., Ltd., Halifax. W. Heaps, Rawson Chambers, Halifax, liquidator.

## Current Market Prices.

### FORAGE.

| | | £ | s. | d. | £ | s. | d. |
|---|---|---|---|---|---|---|---|
| Beans | per qr. | 1 | 14 | 0 | 2 | 0 | 0 |
| Clover, best | per load | 4 | 7 | 6 | 4 | 15 | 0 |
| Hay, best | do. | 3 | 15 | 0 | 4 | 15 | 0 |
| Sainfoin mixture | do. | 3 | 15 | 0 | 4 | 0 | 0 |
| Straw | do. | 1 | 10 | 0 | 2 | 0 | 0 |

### OILS AND PAINTS.

| | | £ | s. | d. | £ | s. | d. |
|---|---|---|---|---|---|---|---|
| Castor Oil, French | pet cwt. | 1 | 0 | 5 | | — | |
| Colza Oil, English | do. | 1 | 4 | 0 | | — | |
| Copperas | per ton | 2 | 0 | 0 | | — | |
| Lard Oil | per cwt. | 2 | 15 | 0 | 2 | 17 | 0 |
| Lead white, ground, carbonate | do. | 1 | 4 | 10 | | — | |
| Do red | do. | 1 | 0 | 4½ | | | |
| Linseed Oil, barrels | do. | 0 | 19 | 6 | | — | |
| Petroleum, American | per gal. | 0 | 0 | 6 | 0 | 0 | 6⅛ |
| Do Russian | do. | 0 | 0 | 4⅝ | 0 | 0 | 4⅞ |
| Pitch | per barrel | 0 | 8 | 0 | | — | |
| Shellac, orange | per cwt. | 8 | 18 | 0 | 9 | 0 | 0 |
| Soda, crystals | per ton | 3 | 2 | 6 | 3 | 5 | 0 |
| Tallow, Town | per cwt. | 1 | 6 | 3 | 1 | 6 | 6 |
| Tar, Stockholm | per barrel | 1 | 0 | 6 | | — | |
| Turpentine | per cwt. | 2 | 3 | 9 | | — | |

### METALS.

| | | £ | s. | d. | £ | s. | d. |
|---|---|---|---|---|---|---|---|
| Copper, sheet, strong | per ton | 75 | 0 | 0 | | — | |
| Iron, Staffs., bar | do. | 6 | 5 | 0 | 6 | 7 | 6 |
| Do. Galvanised Corrugated sheet | do. | 11 | 0 | 0 | 11 | 5 | 0 |
| Lead, pig, Soft Foreign | do. | 11 | 3 | 9 | | — | |
| Do. do. English common brands | do. | 11 | 8 | 9 | | — | |
| Do. sheet English 3lb. per sq. ft and upwards | do. | 14 | 0 | 0 | | — | |
| Do. pipe | do. | 15 | 0 | 0 | | — | |
| Nails, cut clasp, 3in to 6in. | do. | 9 | 5 | 0 | | — | |
| Do. floor brads | do. | 9 | 0 | 0 | | — | |
| Steel, Staffs.. Girders and Angles | do. | 5 | 15 | 0 | 7 | 2 | 6 |
| Do. do. Mild bars | do. | 6 | 7 | 6 | 7 | 2 | 6 |
| Tin, Foreign | do. | 120 | 12 | 6 | 121 | 2 | 6 |
| Do. English ingots | do. | 122 | 10 | 0 | 124 | 0 | 0 |
| Zinc, sheets, Silesian | do. | 23 | 15 | 0 | | — | |
| Do. do. Vielle Montaigne | do. | 24 | 10 | 0 | | — | |
| Do. Spelter | do. | 21 | 2 | 6 | 21 | 3 | 9 |

### TIMBER.

#### Soft Woods.

| | | £ | s. | d. | £ | s. | d. |
|---|---|---|---|---|---|---|---|
| Fir, Dantzic and Memel | per load | 1 | 13 | 0 | 3 | 0 | 0 |
| Pine, Quebec, Yellow | do. | 5 | 5 | 0 | 6 | 5 | 0 |
| Do. Pitch | do. | 2 | 12 | 0 | 3 | 3 | 0 |
| Laths log, Dantzic | per fath. | 4 | 10 | 0 | 5 | 10 | 0 |
| Do. St. Petersburg | do. | 7 | 5 | 0 | | — | |
| Deals, St. Petersburg, Yellow, 3rd, 3×9 | do. | 10 | 10 | 0 | | — | |
| Do. do. do. do. 3rd, 3×11 | do. | 7 | 0 | 0 | | — | |
| Do. do. do. White, 3×7 | do. | 7 | 10 | 0 | | — | |
| Do. do. do. do. 3rd, 2½×7 | do. | 8 | 5 | 0 | | — | |
| Do. do. do. Yellow, 2nd, 3×9 | do. | 11 | 0 | 0 | | — | |
| Do. Archangel, White, 1st, 3×9 | do. | 12 | 15 | 0 | | — | |
| Do. do. Yellow 3rd, 3×9 | do. | 13 | 10 | 0 | | — | |
| Do. do. do. 3×11 | do. | 6 | 5 | 0 | | — | |
| Do. do. do. 3×9 | do. | 7 | 5 | 0 | | — | |
| Do. Miramichi, Yellow Pine, 4th, 3×11 | do. | 9 | 0 | 0 | | — | |
| Do. do. Yellow, 1st, 3×9 | do. | 5 | 15 | 0 | | — | |
| Do. do. do. 2nd, 3×9 | do. | 5 | 15 | 0 | | — | |
| Do. do. do. 3rd, 3×9 | do. | 5 | 15 | 0 | | — | |
| Do. do. do. 1st, 3×9 | do. | 6 | 0 | 0 | | — | |
| Do. do. do. 2nd, 3×9 | do. | 6 | 0 | 0 | | — | |
| Do. do. do. 3rd, 3×9 | do. | 6 | 0 | 0 | | — | |
| Do. do. do. 1st, 3×7 | do. | 5 | 13 | 0 | | — | |
| Do. do. do. 2nd, 3×7 | do. | 5 | 15 | 0 | | — | |
| Do. do. do. 3rd 3×7 | do. | 5 | 15 | 0 | | — | |
| Do. Räfsö, Yellow, 2nd, 3×7 | do. | 10 | 10 | 0 | | — | |
| Do. do. do. do. 2½×7 | do. | 11 | 0 | 0 | | — | |
| Do. Oserko, Yellow, 4th, 4×9 | do. | 10 | 0 | 0 | | — | |
| Do. do. do. 5th, 3×9 | do. | 8 | 15 | 0 | | — | |
| Do. Galatz, White Swag, 3rd, 3×11 | do. | 8 | 0 | 0 | | — | |
| Do. Söderhamn, Yellow, 3rd, 3×9 | do. | 15 | 0 | 0 | | — | |
| Do. Umba, Yellow, 2nd, 3×11 | do. | 17 | 5 | 0 | | — | |
| Do. do. do. 2nd, 3×9 | do. | 16 | 10 | 0 | | — | |
| Do. Oserka, Yellow, 5th, 3×9 | do. | 8 | 15 | 0 | | — | |
| Do. Montreal, Red Pine, 3rd, 4×11 | do. | 10 | 15 | 0 | | — | |
| Do. do. do. 3rd, 4×9 | do. | 10 | 15 | 0 | | — | |
| Do. do. do. 3rd. 3×11 | do. | 10 | 0 | 0 | | — | |
| Do. do. Yellow, 1st, 3×12 to 26 | do. | 29 | 10 | 0 | | — | |
| Do. do. do. 1st, 3×7 to 12 | do. | 21 | 0 | 0 | | — | |
| Do. do. Yellow, 3rd, 3×11 | do. | 11 | 10 | 0 | | — | |
| Do. do. Spruce, 3rd, 3×9 | do. | 9 | 10 | 0 | | — | |
| Do. Quebec, Spruce, 2nd, 3×9 | do. | 10 | 10 | 0 | | — | |
| Battens, all kinds | do. | 4 | 0 | 0 | 14 | 15 | 0 |
| Flooring Boards 1in. prepared, 1st | per square | 9 | 9 | 0 | 11 | 3 | |
| Do. 2nd | do. | 0 | 9 | 9 | 0 | 10 | |
| Do. 3rd &c. | do. | [illegible] | 9 | 0 | | — | |

#### Hard Woods.

| | | £ | s. | d. | £ | s. | d. |
|---|---|---|---|---|---|---|---|
| Ash, Quebec | per load | 3 | 12 | 6 | | — | |
| Birch, Quebec | do. | 3 | 12 | 6 | 3 | 17 | |
| Box, Turkey | per ton | 15 | 0 | 0 | 20 | 0 | 0 |
| Cedar, Cuba | per ft. sup. | 0 | 0 | 5¼ | | — | |
| Do. Honduras | do. | 0 | 0 | $5\frac{31}{32}$ | | — | |
| Do. Tobasco | do. | 0 | 0 | $4\frac{21}{32}$ | | — | |
| Elm, Quebec | per load | 4 | 0 | 0 | | — | |
| Mahogany, Average Price for Cargo, Honduras | per ft. sup. | 0 | 0 | $6\frac{1}{32}$ | | — | |

# Complete List of Contracts Open.

| DATE OF DELIVERY. | WORK TO BE EXECUTED. | FOR WHOM. | FROM WHOM FORMS OF TENDERS MAY BE OBTAINED. |
|---|---|---|---|
| | **BUILDING:** | | |
| Sept. 24 | Barry Docks—Mercantile Marine Office | Commissioners of H.M.Works,&c. | Secretary, H.M. Office of Works, Storey's Gate, S.W. |
| „ 24 | Woolwich—Public Baths | Borough Council | F. Sumner, Borough Engineer, Maxey Road, Plumstead. |
| „ 24 | Saltash—Renovating, &c., School | — | J. H. Pooley, 104 Fore Street, Saltash. |
| „ 24 | Kilkenny, Ireland—Rebuilding Chimney | Guardians | K. Comerford, Clerk, Kilkenny, Ireland. |
| „ 24 | Middleton, King's Lynn—Hall | — | J. Belderson, Bridge Street, King's Lynn. |
| „ 24 | London, E.C.—Portland Cement | Gt. Indian Peninsula Railway Co. | Secretary, 48 Copthall Avenue, London, E.C. |
| „ 24 | Scarborough—Chapel | — | J. C. Petch, Architect, Scarborough. |
| „ 24 | Scarborough—Brick Boundary Wall | Town Council | H. W. Smith, Borough Engineer, New Town Hall, St. Nicholas Street, Scarborough. |
| „ 25 | Hendrefelin, Wales—Schoolroom | — | T. Morgan, Penffynon, Pontrhydygroes. |
| „ 25 | Abbey Wood, Kent—School | Erith Education Committee | W. Egerton, 12 Queen's Road, Erith. |
| „ 25 | St. George-in-the-East—Sundry Works | Guardians | J. R. Browne, Guardians' Offices, Rain Street, Old Gravel Lane, E. |
| „ 26 | Saltburn—Church and Schools | — | Garside & Pennington, Architects, Pontefract. |
| „ 26 | Radcliffe, Lancs—Cemetery Works | Urban District Council | W. L. Rothwell, Engineer, Council Offices, Radcliffe. |
| „ 26 | Wigan—Cemetery Works | Burial Board | W. B. Johnson & Son, 31 King Street, Wigan. |
| „ 26 | Steppingley, Beds—Isolation Hospital | Ampthill R.D.C. | F. T. Tanquery, Clerk, County Court Hall, Ampthill, Beds. |
| „ 26 | Alnwick—Converting House into Schools, &c. | — | G. Reavell, junr., Architect, Alnwick. |
| „ 26 | Shenfield, Essex—Two Cottages | M. Morris | L. H. Marshall, Surveyor, Chippenham, Wilts. |
| „ 26 | Skewen, Wales—Rebuilding Inn | E. E. Bevan | J. C. Rees, Architect, Neath. |
| „ 28 | Dublin—Pumping Station, &c. | Corporation | S. Harty, Engineer, City Hall, Dublin. |
| „ 28 | Fochriw, Wales—Ten Houses | — | W. Walters, 5 Dynevor Street, Fochriw. |
| „ 28 | Gilfach Bargoed, Wales—Seventeen Houses | Park Place Building Club | W. Harris, Architect, Gilfach, Pengam. |
| „ 28 | Maesycwmmer, Mon—Alterations, &c, to School | Bedwas School Board | J. H. Phillips, Architect, Clive Chambers, Windsor Place, Cardiff. |
| „ 28 | Nelson, Lancs—Clock Tower | General Purposes Committee | B. Ball, Borough Engineer, Nelson, Lancs. |
| „ 28 | Manchester—Cement | Rivers Committee | Secretary, Rivers Department, Town Hall, Manchester. |
| „ 28 | Cowes—Portland Cement | Urban District Council | J. W. Webster, Engineer, Council Offices, Cowes. |
| „ 29 | Ealing, W.—Additions, &c., to Telephone Exchange | Commissioners of H.M.Works,&c. | Secretary, H.M. Office of Works, &c., Storey's Gate, S.W. |
| „ 29 | Halifax—Silversmith's Works | C. Horner | J. F. Walsh & G. Nicholas, Architects, Museum Chambers, Halifax. |
| „ 29 | Ealing Dean, W.—Sorting Office | Commissioners of H.M.Works,&c. | Secretary, H.M. Office of Works, &c., Storey's Gate, S.W. |
| „ 29 | North Shields—Shops, &c. | Tynemouth Corporation | J. F. Smillie, Borough Surveyor, Tynemouth. |
| „ 30 | Bootle, Lancs—Extension of Boiler-House | Corporation | B. J. Wolfenden, Borough Engineer, Bootle, Lancs. |
| „ 30 | Deri, via Cardiff—Thirty-five Houses | No. 1 Building Club | J. Ward, Secretary, Cascade House, Deri, via Cardiff. |
| „ 30 | Longwick, near Princes Risborough—Chapel | — | F. Taylor, Architect, Temple Street, Aylesbury. |
| „ 30 | Pontypool—Rebuilding Hotel | — | Fisher & Sons, Architects, Pontypool. |
| „ 30 | Senghenydd, Wales—Chapel | — | T. Nicholas, Secretary, Station House, Senghenydd. |
| „ 30 | London, N.W.—Tenements, Stabling, &c. | Hampstead Borough Council | O. E. Winter, Borough Engineer, Town Hall, Hampstead. |
| Oct. 1 | Bradford—Office, Store, Shed, &c. | Corporation | J. Watson, Engineer, Town Hall, Bradford. |
| „ 1 | Withycombe, Raleigh—Stables, &c. | — | E. H. Harbottle & Son, Architects, County Chambers, Exeter. |
| „ 2 | St. Mary's, Isles of Scilly—Coastguard Buildings | — | Superintending Civil Engineer, H.M. Dockyard, Devonport. |
| „ 2 | Ballingry, Scotland—Enlargement of School | School Board | W. Birrell, 200 High Street, Kirkcaldy. |
| „ 2 | Newton St. Cyres, Exeter—Pair of Cottages | Quick Estate Trustees | Ellis, Son & Bowden, Surveyors, Bedford Chambers, Exeter. |
| „ 3 | Cork—Gate Lodge | Queen's College | H. W. Williams, Secretary, Office of Public Works, Dublin. |
| „ 5 | Pickering—School | Grammar School Governors | J. Bilson, 23 Parliament Street, Hull. |
| „ 6 | London, N.—Pulling-down and Rebuilding | Shoreditch Borough Council | J. R. Dixon, Engineer, Town Hall, Old Street, E.C. |
| „ 6 | London, E.C.—Two Underground Conveniences | Corporation | Engineer, Guildhall, E.C. |
| „ 6 | London, E.—Repairing, &c., Pumping Station | London County Council | Engineer's Department, County Hall, Spring Gardens, S.W. |
| „ 7 | Naas, Ireland—Sixteen Labourers' Cottages | Rural District Council | D. G. Purcell, Clerk, Council Offices, Naas. |
| „ 7 | Fulham—Lodges, Refreshment Rooms, Lavatories, &c. | Borough Council | F. Wood, Borough Engineer, Town Hall, Fulham, S.W. |
| „ 13 | Letterkenny, Ireland—Floors | Donegal Asylum Committee | J. P. M'Grath, Archt., Commercial Bldgs., Foyle St, Londonderry. |
| | **ENGINEERING:** | | |
| Sept. 24 | London, E.C.—Engines, &c. | Great Peninsula Railway Co. | Secretary, 48 Copthall Avenue, E.C. |
| „ 25 | London, E.C.—Engines | Burma Railways Co. | Secretary, 76 Gresham House, Old Broad Street, E.C. |
| „ 26 | Eccles, Lancs—Cast-Iron Tank, &c. | Corporation | Borough Electrical Engineer, Cawdor Street, Patricroft. |
| „ 26 | Eccles, Lancs—Bridge Reconstruction | Corporation | C. S. Allott & Son, 46 Brown Street, Manchester. |
| „ 26 | Rochdale—Cables and Switchboard Alterations | Guardians | Shephard & Watney, Greek Street Chambers, Leeds. |
| „ 27 | Pozoblanco, Spain—Electric Lighting Town | — | Municipal Authorities, Pozoblanco. |
| „ 28 | Launceston, Tasmania—Electric Meters | — | J. Terry & Co., 7 Great Winchester Street, E.C. |
| „ 28 | Martock, near Yeovil—Water Supply Extension | Rural District Council | Bailey-Denton & Partners, Engrs, 9 Bridge St., Westminster, S.W. |
| „ 29 | London, S.W.—Wagons, Carriages, &c. | — | Director-General of Stores, India Office, Whitehall, S.W. |
| „ 30 | Dundee—Re-laying Mains | Town Council | H. Richardson, City Electrical Engineer, Dudhope Crescent Road, Dundee. |
| „ 30 | Conway—Sewerage and Waterworks | Rural District Council | T. B. Farrington, Engineer, Trinity Square, Llandudno. |
| „ 30 | Brisbane, Queensland—Postal and Telegraph Material | — | Department Stores, Navy Street, Brisbane. |
| „ 30 | Amsterdam—Railway Materials | — | Mart Hijhoff, Nobelstreet 18, The Hague. |
| Oct. 1 | Utrecht, Netherlands—Electricity Supply Station | Town Council | Gemeente-Secretaire of Utrecht. |
| „ 1 | Angram, Bradford—Masonry Dam | Corporation | J. Watson, Waterworks Engineer, Town Hall, Bradford. |
| „ 1 | Bradford—Light Railways | Corporation | J. Watson, Waterworks Engineer, Town Hall, Bradford. |
| „ 1 | Bradford—Service Reservoirs | Corporation | J. Watson, Waterworks Engineer, Town Hall, Bradford. |
| „ 1 | Bradford—Masonry Dam, &c. | Corporation | J. Watson, Waterworks Engineer, Town Hall, Bradford. |
| „ 5 | Dublin—Electric Crane | Port and Docks Board | J. P. Griffith, Engineer, East Wall, Dublin. |
| „ 5 | Brighton—Tramway Materials, &c. | Town Council | F. J. Tillstone, Town Clerk, Town Hall, Brighton. |
| „ 5 | Nottingham—Pumping Engines | Water Committee | S. Moore, General Manager, Water Dep., St. Peter's Sq., Nottingham. |
| „ 5 | Bishop Auckland—Waterworks | Rural District Council | C. Johnston, Surveyor, Cradock Street, Bishop Auckland. |
| „ 6 | London, S.E.—Steam Engines | London County Council | County Hall, Spring Gardens, S.W. |
| „ 6 | Vauxhall—Steel Superstructure and Granite Piers of Bridge | London County Council | Engineer's Department, County Hall, Spring Gardens, S.W. |
| „ 8 | Swansea—Cofferdam | Harbour Trustees | A. O. Schenk, Engineer, Harbour Offices, Swansea. |
| „ 10 | Valencia—Port Works | Committee | Secretaria da la Junta de obras del, puerto de Valencia. |
| „ 13 | Letterkenny, Ireland—Heating, &c. | Asylum Committee | J. P. M'Grath, Architect, Commercial Bldgs, Foyle St., Londonderry. |
| „ 19 | Johannesburg—Electrical Plant | Municipal Council | Mordey & Dawbarn, 82 Victoria Street, Westminster, S.W. |
| „ 26 | Harrogate—Iron and Glass Pump-room and Colonnade | — | F. Bagshaw, Borough Engineer, Municipal Offices, Harrogate. |
| 30 | Marina, Upper Barracca, Malta—Lift | Crown Agents for the Colonies | Receiver-General and Director of Contracts, Valletta, Malta. |
| Nov. 2 | Perth, Western Australia—Railway Carriages | — | Agent-General for Western Australia, 15 Victoria St., Westminster. |
| Dec. 15 | Los Andes, Chili—Railway | — | Commercial Intelligence Branch, Board of Trade, 50 Parliament Street, S.W. |
| 1904.<br>Feb. 1 | Cairo—Three Road Bridges over Nile | Ministry of Public Works | Commercial Intelligence Branch, Bd. of Trade, 50 Parliament St., S.W. |
| | **FURNITURE:** | | |
| Sept. 26 | Castlerea, Ireland—Bedsteads | Guardians | J Hester, Acting Clerk, Castlerea, Ireland. |
| | **IRON AND STEEL:** | | |
| Sept. 24 | London, E.C.—Pig Iron, &c. | Gt. Indian Peninsula Railway Co. | Secretary, 48 Copthall Avenue, E.C. |
| „ 24 | Pentre, Wales—Tubes, &c. | Rhondda Urban District Council | O. Thomas, Gas and Water Offices, Pentre, R.S.O., Glam. |
| „ 25 | London, E.C.—Steel Boiler Tubes | Burma Railways Co., Ltd. | Secretary, 76 Gresham House, Old Broad Street, E.C. |
| „ 26 | Eccles, Lancs—Cast-Iron Tank | Corporation | Borough Electrical Engineer, Cawdor Street, Patricroft. |
| „ 26 | Radcliffe, Lancs—Fencing, Gates, &c | Urban District Council | W. L. Rothwell, Engineer, Council Offices, Radcliffe. |
| „ 29 | Walthamstow—Corrugated Iron Sheds | Urban District Council | G. H. Holmes, Council's Engineer, Town Hall, Walthamstow. |
| „ 29 | Swindon—Wrought-Iron Fencing | Corporation | H. J. Hamp, Borough Surveyor, Town Hall, Swindon. |
| „ 29 | London, S.W.—Wheels and Axles | — | Director-General of Stores, India Office, Whitehall, S.W. |
| „ 30 | London, N.—Wrought-iron Fencing, &c. | Wood Green U.D.C. | C. J. Gunyon, Borough Engineer, Town Hall, Wood Green, N. |
| Oct. 3 | Bridlington—Ironwork | Property Committee | Mangnall & Littlewoods, 42 Spring Gardens, Manchester. |
| „ 5 | Johannesburg—Rails, &c. | Municipal Council | Mordey & Dawbarn, 82 Victoria Street, Westminster, S.W. |
| „ 6 | London—Steel Bridge Girders, &c. | Great Western Railway Co. | Engineer, Paddington Station, London. |
| „ 21 | Adelaide, South Australia—Railway Stores | — | Chief Mechanical Engineer, Islington, South Australia. |
| | **PAINTING AND PLUMBING:** | | |
| Sept. 24 | Pentre, Wales—Lead and Compo Pipes | Rhondda U.D.C. | O. Thomas, Engineer, Gas and Water Offices, Pentre, R.S.O., Glam. |
| „ 24 | Withington, Lancs—Painting | Urban District Council | A. H. Mountain, Council's Surveyor, Town Hall, West Didsbury. |
| „ 24 | Ebbw Vale, Mon. Painting Lamps, &c. | Urban District Council | T. J. Thomas, Surveyor, Council Offices, Drill Ground, Ebbw Vale |
| Oct. 6 | Stratford—Re-painting, &c., Buildings | London County Council | Engineer's Department, County Hall, Spring Gardens, S.W. |
| | **ROADS AND CARTAGE:** | | |
| Sept. 24 | Ebbw Vale, Mon—Street Works | Urban District Council | T. J. Thomas, Surveyor, Council Offices, Drill Ground, Ebbw Vale |
| „ 24 | Treharris, Wales—Roads, &c. | — | W. Dowdeswell, Architect, Treharris. |

# Complete List of Contracts Open—*continued.*

| DATE OF DELIVERY. | WORK TO BE EXECUTED. | FOR WHOM. | FROM WHOM FORMS OF TENDERS MAY BE OBTAINED. |
|---|---|---|---|
| | **ROADS AND CARTAGE**—*continued.* | | |
| Sept. 25 | Dodworth, Barnsley, Yorks—Street | Urban District Council | P. A. Hinchcliffe, 14 Regent Street, Barnsley. |
| " 25 | Nelson, Lancs—Street Works | Sewage and Streets Committee | B. Ball, Borough Engineer, Town Hall, Nelson. |
| " 26 | Wigan—Roads, &c. | Burial Board | W. B. Johnson & Son, 31 King Street, Wigan. |
| " 26 | Shoreham, Sussex—Granite and Flints | Urban District Council | F. Slaughter, Council's Surveyor, West Street, Shoreham. |
| " 28 | Eastbourne—Private Improvement Works | Highways & Drainage Committee | D. J. Bowe, Borough Surveyor, Town Hall, Eastbourne. |
| " 28 | Guildford—Broken Granite | Town Council | C. G. Mason, Borough Surveyor, Tuns Gate, Guildford. |
| " 29 | Bromley, Kent—Materials | Rural District Council | E. Haslehurst, Clerk, Union Offices, Bromley, Kent |
| " 29 | Walthamstow—Street Works | Urban District Council | G. W. Holmes, Engineer, Town Hall, Walthamstow. |
| " 29 | Hanwell—Broken Granite | Urban District Council | P. J. Dennis, Clerk, Council Offices, Hanwell, W. |
| " 30 | Exmouth—Making-up | Urban District Council | S. Hutton, Surveyor, Exmouth. |
| " 30 | Ilfracombe—Roads &c. | Urban District Council | Engineer, Town Hall, Ilfracombe. |
| " 30 | Macclesfield—Street Works | Highways Committee | Borough Engineer, Town Hall, Macclesfield. |
| " 31 | Dunstable—Steam Rolling | Town Council | G. Simcox, Borough Surveyor, Town Hall, Dunstable. |
| ct. 3 | Southowram—Granite and Dross | Urban District Council | R. W. Evans, Clerk, Commercial Bank Chambers, Halifax. |
| " 12 | Nantymoel and Blaengarn, Wales—Street Works | Ogmore and Garw U.D.C. | H. D. Williams, Surveyor, Council Offices, Blackmill, Bridgend. |
| | **SANITARY:** | | |
| ept. 23 | Stepney, Wapping and Poplar—Burnt Lime | Commercial Gas Co. | Engineer, Commercial Gas Works, Stepney, E. |
| " 24 | Wymington—Sewage Disposal Works | Bedford R.D.C. | M. Sharman, Clerk, 1 Harper Street, Bedford. |
| " 24 | Swadlingcote—Lime | Joint Water Committee | T. Kidd, Water Engineer, Swadlingcote. |
| " 24 | Stowmarket, Suffolk—Drainage Works | Urban District Council | G. W. Lingwood, Station Road, Stowmarket. |
| " 25 | Ashby-de-la-Zouch—Sewers, &c. | Rural District Council | S. Turner, Surveyor, Avenue Road, Ashby-de-la-Zouch. |
| " 26 | Wigan—Drains, &c. | Burial Board | W. B. Johnson & Son, 31 King Street, Wigan. |
| " 26 | Lichfield, Staffs—Converting Privies | Gas Company | Clerk, Gas Office, Queen Street, Lichfield. |
| " 28 | Clifton, York—Sewers, &c. | Asylum Committee | Fairbank & Son, Engineers, Lendal Chambers, York. |
| " 28 | Guildford—Scavenging | Town Council | C. G. Mason, Borough Surveyor, Tuns Gate, Guildford. |
| " 28 | Pittenweem, Scotland—Alterations, &c., to Sewerage System | Town Council | J. Currie Architect, Elie. |
| " 28 | Ripley, Surrey—Sewerage Works | Rural District Council | J. Anstee, Engineer, Commercial Road, Guildford. |
| " 29 | Buntingford, Herts—Drainage Works | Guardians | E. G. Thody, Surveyor, High Street, Buntingford. |
| " 30 | Dorchester—Sanitary Works | —— | W. E. Groves, Secretary, Boardroom, Hospital, Dorchester. |
| " 30 | Eastbrook and Dinas Powis, Wales—Sewers, &c. | Rural District Council | B. Latham, Engineer, Parliament Mansions, Victoria Street, S.W. |
| " 30 | Formby, Lancs—Sewerage Works | West Lancs. R.D.C. | C. A. Atkinson, 11 Tithebarn Street, Liverpool. |
| ct. 5 | Barcelona, Spain—Sewerage and Drainage Works | —— | Municipal Authorities, Barcelona. |
| " 6 | Becton and Erith, Kent—Lime, &c. | London County Council | Engineer's Department, County Hall, Spring Gardens, S.W. |
| " 1 | Withycombe, Raleigh—Drainage, &c. | —— | E. H. Harbottle & Son, Architects, County Chambers, Exeter. |
| " 6 | London—Underground Conveniences | Streets Committee | Engineer, Public Health Department, Guildhall, E.C. |
| " 13 | Ilford—Sewage Works Extension | Urban District Council | H. Shaw, Engineer, Town Hall, Ilford. |
| | **TIMBER:** | | |
| ept. 24 | London, W.—Firewood | Guardians | J. H. Rutherglen, Clerk, Guardians' Offices, Marloes Road Kensington, W. |
| " 28 | London, E.C.—Telegraph Poles | —— | S. C. Hoolley, 17–19 Bedford Street, London, W.C. |

# List of Competitions Open.

| ATE OF ELIVERY. | DESIGNS REQUIRED. | AMOUNT OF PREMIUM. | DEPOSIT REQUIRED FOR CONDITIONS, &C. | BY WHOM ADVERTISED. |
|---|---|---|---|---|
| pt. 25 | Earlestown, Lancs—Memorial Monument | £10. | —— | C. Cole, Hon. Sec., S.A. War Relief Fund Commt., Town Hall, Earlestown. |
| 26 | Leyland, Lancs—Laying-out Land, &c. | £15 15s. | —— | M. H. Wilkinson, 21 Towngate, Leyland. |
| 29 | Brighton—Hospital | £50, £30, £20. | £1 1s. | L. Holmes, 76 West Street, Brighton. |
| 30 | Dublin—Workmen's Cottages | £20. | —— | F. B. Ormsby, Secretary, Kingsbridge Terminus, Dublin. |
| t. 1 | Heywood—Library | £30, £20, £10. | £1 1s. | J. A. Settle, Borough Engineer, Municipal Buildings, Heywood. |
| 2 | Bromley, E.—Public Library | £75, £25. | 10s. 6d. | H. Heckford, Borough Surveyor, Council Offices, High Street, Poplar. |
| 7 | Saltwood—Sewage Disposal | £31 10s. | —— | R. Lonergan, 11 Cheriton Place, Folkestone. |
| 12 | Rawtenstall—Free Library, &c. | £100, £50, £30. | £2. | A. W. Lawson, Borough Surveyor, Municipal Offices, Rawtenstall. |
| 26 | Harrogate—Iron & Glass Pump-room & Colonnade | —— | £1 | F. Bagshaw, Borough Engineer, Municipal Office, Harr [illegible]te. |
| v. 14 | Tamworth—Public Library | £20, £10, £5 | —— | J. Matthews, Town Clerk, Bolebridge Street, Tamworth. |
| 21 | Sunderland—Additions and Alterations to Town Hall. | £100, £50, £25. | £5. | J. W. Moncur, Borough Engineer, Town Hall, Sunderland. |
| c. 1 1904. | Wakefield—Reconstruction of Cattle Market | £52 10s., £26 5s. | £2. | E. R. Langhorne, Clerk to Governors of Charities, Wakefield. |
| r. 31 | Vienna—Machinery to Lift Boats on Canal | 100,000, 75,000 and 50,000 kronen. | —— | Austro-Hungarian Consulate-General, 22 Laurence Pountney Lane, E.C. |

uaranteed Gearing

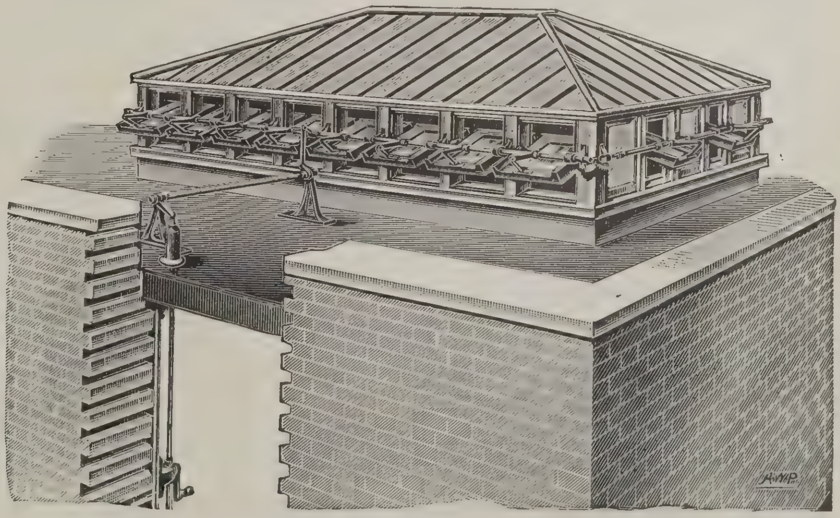
ROBERT ADAMS,
5 & 67, Newington Causeway, LONDON, S.E.
The Originator and Leading Maker of the Modern System of Ventilating Gearing.

IGHEST AWARDS AT PARIS, 1900.

ADAMS' SPECIAL
"CONTINUOUS GEARING"
sed in most of the best known Public Buildings in the United Kingdom.

ILLUSTRATED PRICE LISTS ON APPLICATION.
FTEEN GOLD MEDALS AWARDED.

This Illustration shows the Gearing fixed outside, the Controlling Handle being within the Room.



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*(Adjoining Holborn Town Hall).*

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**Specifications, Quantities, &c., LITHOGRAPHED**

(4)

**Advertisement Aphorism for the Week.**

> *The influence of a journal is determined by the people who read it.*
>
> *The people whom the advertiser wants to reach read the* BUILDERS' JOURNAL.

## Appointments Wanted.

*The charge for Advertisements under this heading is 1s. 6d. per insertion not exceeding four lines, and 6d. per line afterward, prepaid. Three insertions may be had for the price of two. Advertisements must reach the Office not later than 5 o'clock on Monday.*

ARCHITECT'S JUNIOR ASSISTANT desires re-engagement. Accurate draughtsman and tracer, working drawings, levelling, and surveying. Good references.—H. A., 2, Rosebery Terrace, Crouch End, N.

ARCHITECT'S JUNIOR ASSISTANT requires an engagement in the Midlands.—Apply Box 2580, BUILDERS' JOURNAL Office, 9, East Harding Street, Fetter Lane, E.C.

ARCHITECT'S ASSISTANT of 6 years' experience, with good references, desires engagement in good office. Salary 35s.—ARCHITECT, 43, Upper Gloucester Place, N.W.

ARCHITECTURAL ASSISTANT desires RE-ENGAGEMENT. Over five years' good and varied experience (three years' articles). Working drawings, details, surveying, &c.—Apply, S. C. A., 56, Great Freeman Street, Nottingham.

ARCHITECTURAL ASSISTANT desires SITUATION. 14 years' all-round experience. Working drawings, details, specifications, also hospital and asylum work. Good references.—C. T., 80, Mordaunt Road, Harlesden, N.W.

AS CLERK OF WORKS. Long varied experience in the trade. Structural Steel Work, Concrete, Brick, and Stone. Used to large works. Good testimonials, &c.—Box 2549, BUILDERS' JOURNAL Office, 9, East Harding Street, Fetter Lane, E.C.

CLERK OF WORKS seeks RE-ENGAGEMENT. Just finished large job in London. Thoroughly practical. First-class references. Age 45. Town or country.—Address B. L., 81, High Street, West Norwood.

ENGINE DRIVER requires Berth. Can do all repairs. Has had seven years' workshop experience. Highest references.—C. B., 1, Petley Road, Hammersmith.

GENERAL FOREMAN, thoroughly practical, many years' experience, seeks re-engagement. Town or country. Trade, Carpenter. Aged 50.—D., 93, Abbotts Park Road, Leyton, N.E.

GOOD MASON wants Job. Abstainer. Good draughtsman. Capable of setting out. References. — MASON, Stone Works, Frinton-on-Sea, Essex.

MACHINIST or SAWYER wants JOB. All round hand. Sharpen saws, make cutters. Understand Gas Engine. Aged 31. Low wages.—A. BASSON, c/o Howard, 1, Pancras Street, Tottenham Court Road, W.

PLUMBER and FITTER wants PIECE-WORK. Own plant. Good personal references from architect and builder finishing large job in West End.—PLUMBER, 114, Clifton Road, Norbiton.

STAIRS and RAILS. — Re-engagement wanted by a thorough practical Man, by the hour or piecework. Good references.—J. DYER, 69, Bemerton Street, Copenhagen Street, N.

TRACINGS. First Class Tracer desires further evening work. Reliable. Seven years' experience. Terms, agreeable—moderate.—Write, R. LAUNCELOT SIVYER, 20, Cowley Street, Westminster, S.W.

WORKING FOREMAN BRICKLAYER. —Varied experience. Good references as to workmanship, character, &c. Age 39.—Address, H., 6, Dorset Road, East Ham, Essex.

WORKING GENERAL FOREMAN seeks re-engagement. Thoroughly experienced in all branches; good references; town or country; trade, carpenter and joiner.—Address, J. B., 62, Davenport Road, Catford, S.E.

## Appointments Vacant.

*The charge for Advertisements under this heading is 1s. 6d. per insertion not exceeding four lines, and 6d. per line afterward, prepaid. Three insertions may be had for the price of two. Advertisements must reach the Office not later than 5 o'clock on Monday.*

JUNIOR CLERKS (with experience of builder's office). THE SCHOOL BOARD FOR LONDON are about to APPOINT YOUTHS to the LOCAL OFFICES of the CLERKS of WORKS for repairs in the following districts:—

1. 37, Kentish Town Road, N.W.
2. St. Clement's School, Notting Hill.
3. Townsend Street, Old Kent Road.
4. London Fields School, South Hackney.

The limits of age are between 17 and 19.

The salary will commence at 20s. per week, rising to 30s. per week by annual increments of 2s. 6d. per week, and the hours of attendance will be the same as those for the workmen.

Candidates will be required to have had some experience of the work of a builder's office, and to be able to pass an examination in shorthand.

Application should be made on a form, which can be obtained at the Works Department (Room 153), at the Head Offices of the Board, Victoria Embankment, W.C., and should be returned not later than 26th SEPTEMBER, 1903.

FOREMAN PAINTER WANTED. Used to very large jobs at cutting prices, railway stations, &c.—Apply, by letter, to W., 231, Park Lane, Tottenham.

SALESMAN.—Wanted a Smart Business Man possessing a knowledge of the requirements of the Building Trade in London, for Chimney-pieces, Stoves, and Kitchener Showrooms. Applicants must state by letter what experience they possess and salary required to the Managing Director, YOUNG & MARTEN, Ltd., Stratford, London, E.

TO PARENTS AND GUARDIANS.—Quantity Surveyor desires Pupil to learn this lucrative business; five years' articles; premium 200 guineas. Pupil must reside with Principal and pay, in addition to premium, £2 weekly for board and residence. Solicitor's references exchanged. — Address, JOHN WINDSOR, 75, Parkhurst Road, London, N.

WOOD CARVER.—WANTED, a good MAN, accustomed to carving church figures and heads.—Apply, with specimens of work, to GILBERT SEALE, 22, George Street, Camberwell Road, London.

## Businesses Wanted & For Sale.

*The charge for Advertisements under this heading is 1s. 6d. per insertion not exceeding four lines, and 6d. per line afterward, prepaid. Three insertions may be had for the price of two. Advertisements must reach the Office not later than 5 o'clock on Monday.*

FOR DISPOSAL, as a going concern, through retirement of present proprietor, an old-established BUILDER and CONTRACTORS' BUSINESS, which has been in present hands over 40 years. Improving market town and railway centre, where houses are in demand and building trade is brisk. Reliable staff of workmen, convenient premises, and good connection. A fine opportunity for an energetic man who knows his business. No goodwill is asked. Stock and plant at valuation.—Apply to JOSEPH COLLINGWOOD, Business Transfer Agent, Exchange Buildings, March.

## Drawings, Tracings, &c.

*The charge for Advertisements under this heading is 1s. 6d. per insertion not exceeding four lines, and 6d. per line afterward, prepaid. Three insertions may be had for the price of two. Advertisements must reach the Office not later than 5 o'clock on Monday.*

DESIGNER FOR STAINED GLASS requires additional work. Quaint up-to-date treatment for leaded lights. Competition sketches prepared.—Address, Box 2572, BUILDERS' JOURNAL Office, 9, East Harding Street, Fetter Lane, E.C.

PERSPECTIVES by R.A. Exhibitor (colour or ink). Best style. Also temporary assistance to architects. Working drawings and design. Terms moderate.—C. R. CHIDSON, 13, Eardley Road, Streatham.

TO ARCHITECTS AND OTHERS.—Quantities prepared, also working, detail drawings, specifications, by Experienced Surveyor. Terms arranged.—E PAYSON, c/o Housekeeper, 11, Great James Street, Bedford Row, W.C.

TO ARCHITECTS, BUILDERS, AND OTHERS.—Plans prepared at lowest charges; Tracings from 5s. Specifications, &c., accurately typewritten, 1s. per 1,000 words.—D. R. MATHISON, 39A, Algernon Road, Hendon.

## Miscellaneous.

BRICKS.—Norbury, adjoining station.—PRICES WANTED for Red and Stock Bricks, Lime, Cement, Sand, Ballast, &c., in large quantities for the development of an estate as above.—L. WHITEHEAD & Co., Ltd., Portland Place North, Clapham Road, S.W.

WANTED immediately, about 2,000 yards cube Clinker or Locomotive Ashes, suitable for filter beds, on rail or delivered to Frimley Station, L. and S. Rly.—L. WHITEHEAD & Co., Ltd., Portland Place North, Clapham Road, London, S.W.

## THE BUILDERS' JOURNAL.

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**After 4 LINES, 6d. per LINE.**

Write your "Want" Advertisement on this form and send it to 9, East Harding Street, E.C., with Postal Order for 3/-.

**NOTE.—5 o'clock p.m. Monday is the latest time for receiving "Want" Advertisements. Office: 9, East Harding Street, Fetter Lane, E.C.**

## EDUCATIONAL.

ALL TECHNICAL EXAMINATIONS.—First place in every open competition during last two years. Correspondence or Resident Tuition. Vacancy for Articled Pupil.—G. A. T. MIDDLETON, 19, Craven Street, W.C.

QUANTITIES. A course of Correspondence Lectures on the preparation of Quantities on the most approved London System WILL COMMENCE SEPTEMBER 28th. For particulars apply Box 2546, BUILDERS' JOURNAL, 9, East Harding Street, Fetter Lane, E.C.

R.I.B.A. EXAMS.—Personal and Correspondence tuition; courses of any duration. Apply for syllabus to Mr. A. G. BOND, B.A.Oxon., A.R.I.B.A., 115, Gower Street, London, W.C. (late Howgate and Bond).

STRUCTURAL STEELWORK.—Structural Engineer resident in London receives evening pupils for theory and practice of design of roof, girder, and bridge work, and undertakes the designing of all types of structures.—Address, Box 2554, BUILDERS' JOURNAL Office, 9, East Harding Street, E.C.

### THE SOCIETY OF ARCHITECTS.

FOUNDED 1884. INCORPORATED 1893.

The next ENTRANCE EXAMINATION will be held in LONDON and certain PROVINCIAL CENTRES on OCTOBER 6th, 7th, and 8th, 1903.

SYLLABUS post free, or on application to THE SECRETARY of THE SOCIETY OF ARCHITECTS, St. James's Hall, Piccadilly, London, W.

### KING'S COLLEGE, LONDON.

TRAINING FOR SANITARY INSPECTORS.

The Course of Systematic Instruction in Building Construction, the General Duties of Sanitary Inspectors, and Chemistry and Physics in Relation to Sanitary Science, will commence SEPTEMBER 28th.

Apply to the SECRETARY, King's College.

### WORSHIPFUL COMPANY OF CARPENTERS.

EVENING CLASSES and LECTURES
in BUILDING CONSTRUCTION, DRAWING, and
QUANTITIES, and the
HISTORY of ARCHITECTURE;
also the ARCHITECTURAL STUDIO
at KING'S COLLEGE, LONDON,
will commence in the week ending SEPTEMBER 28TH.

For full particulars apply to the Secretary; or to J. HUTTON FREEMAN, Esq., Carpenters' Hall, London Wall, E.C.

### BATTERSEA POLYTECHNIC, S.W.

PRINCIPAL:
SIDNEY H. WELLS, A.M.I.C.E., A.M.I.M.E.

**SPECIAL DAY COURSES.**

COMMENCING ON MONDAY, SEPTEMBER 21ST.

In BUILDING, ARCHITECTURAL, and CONSTRUCTIONAL WORK, including Preparation for R.I.B.A. and other Professional Examinations.

**EVENING CLASSES.**

COMMENCING ON MONDAY, SEPTEMBER 28TH.

In all Science and Technical Subjects for Mechanical, Electrical, and Municipal Engineering, Architectural and Building Work, including Motor Car Engineering, Builders' Quantities, Sanitary Science, and Chemistry for Builders.

Prospectus gratis on application to the Secretary.

### UNIVERSITY COLLEGE, LONDON.

(UNIVERSITY OF LONDON.)

SCHOOL OF ARCHITECTURE.

The INAUGURAL LECTURE of the SCHOOL OF ARCHITECTURE will be delivered by
PROFESSOR F. M. SIMPSON, F.R.I.B.A.,
on
WEDNESDAY, OCTOBER 7TH, AT 5 P.M.
MR. ASTON WEBB, R.A., PRESIDENT OF THE ROYAL INSTITUTE OF BRITISH ARCHITECTS WILL TAKE THE CHAIR.

The subject will be "ARCHITECTURAL EVOLUTION."

Students may enter for the full three-year Diploma Course or for Special Courses.

Evening Classes in Building Construction and Working Drawings, and in Quantity Surveying, will begin on October 8th and 13th respectively.

Particulars of the School of Architecture and of the Evening Classes may be obtained on application to

T. GREGORY FOSTER, Secretary.

## Miscellaneous.

CLINKER FOR SALE, washed and graded for Bacteria Beds; any quantity; about 1s. 8d. per cubic yard. Large stocks on hand. Also slag and concrete goods.—Apply WAKE & HOLLIS, LTD., Collingwood Buildings, Newcastle-on-Tyne.

FOR SALE.—18TH CENTURY PORCH, Facsimile in Wood of Doorway shown Page 61 September Number BUILDERS' JOURNAL; good preservation. Price £15.—Apply STOKES & SONS, Giggs Hill House, Thames Ditton.

LONDON ADDRESS Wanted at an Architect's office for letters, &c. Inns of Court, Oxford Circus, or Westminster preferred.—J. CROSSLAND, Consulting Landscape Gardener, Broughton-in-Furness, Lancashire.

MORTGAGE SECURITIES WANTED from £1,000 to £25,000 for large fund immediately available for advances.—Apply W. P. NEAL, Esq., Pinner's Hall, Great Winchester Street, London, E.C.

LIFTS.—WM. AUG.'S GIBSON, LTD., formerly President of American Elevator Co., later Managing Director Otis Elevator Co., Ltd. Temple Bar House, 28, Fleet Street, London, E.C.

**6,000** TEA SETS, 3/6. 4,000 DINNER-SETS, 7/6 each. (Finest quality.) The Two Services sent for 10/6. Builders and Furnishers requiring China contracts, should write for quotations.—ARTHUR J. HULL, Dept. 71, King Street Pottery, Longton, Staffs.

**WIRE NAILS,** Mixed, 8*s.* per cwt.; 28 lbs., 2*s.* 3*d.*; Screws, mixed, 30*s.* per cwt.; 28 lbs., 8*s.*; wire, cut, wrought and malleable nails, tacks, shoe nails, rivets, &c., wholesale prices.—MIDLAND NAIL WORKS, 25 and 26, Rea Street, Birmingham. (John Pyne, Proprietor.)

---

**"ACCOUNT BOOKS and How to Use Them."**
**"BOOKKEEPING FOR BUILDERS."**

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**CORSE,** BEDFORD ROW STATIONERY WAREHOUSE,
THEOBALD'S ROAD, LONDON.

All Books described are kept in stock.

EVERYTHING FOR ARCHITECTS AND BUILDERS.

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**BRICKS. RED BRICK.**

A large Stock of best Red Facings, Light, Medium, and Dark. Red Sand Faced. Also Stock of 100 Patterns Moulded Goods of all descriptions, including CHIMNEY POTS, RIDGE TILES, FLOOR TILES. Architects' own Designs to Order on shortest notice.

***The South Lincolnshire Brick and Tile Co., Ltd., Bourne, Lincs.***

---

**GIBBS Brothers,**
**LOUGHBOROUGH.**

Manufacturers of
**Best Red Pressed and Sand Stock Facing Bricks, &c., also of**
**Mountsorrel Concrete Paving Flags, Window Heads, Cills, &c.**

SLATE MERCHANTS.
Stocks of VELINHELI and BANGOR on hand.

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ESTABLISHED 1851.

**BIRKBECK BANK,**

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2½ % DEPOSIT ACCOUNTS repayable on demand. 2½ %

The BIRKBECK ALMANACK, with full particulars, post free.

C. A. RAVENSCROFT, *Managing Director.*

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**LONDON PLATE-GLASS**
**INSURANCE CO., LTD.**

Head Office: 49, Queen Victoria Street, E.C.

Ten per cent. of the Premiums returned every six years in cases where no claim has arisen.

APPLICATIONS FOR AGENCIES INVITED.
LIBERAL TERMS FOR BUSINESS INTRODUCED.

## Contracts Open—*(Continued from page iv).*

E. R.

TO BUILDERS AND CONTRACTORS.

TENDERS for the ERECTION of NEW COASTGUARD BUILDINGS, at Telegraph, St. Mary's, Isles of Scilly, consisting of houses for four men, officer's room, telescope house, &c., will be received at this office before NOON on 2nd OCTOBER, 1903.

Copies of the drawings and specification can be seen at this office; at the Coastguard Station, St. Mary's, Scilly; at the Coastguard Station, Penzance; and at the office of the Superintending Civil Engineer, H.M. Dockyard, Devonport.

Bills of Quantities can be obtained on application to the Superintending Civil Engineer, H.M. Dockyard, Devonport.

DIRECTOR OF WORKS DEPARTMENT,
ADMIRALTY,
Avenue House,
Northumberland Avenue,
London,
W.C.

TO BUILDERS AND CONTRACTORS.

TENDERS for the ERECTION of a NEW COASTGUARD STATION, consisting of five houses, watch-room, store-room, &c., at Walton Creek, in the County of Essex, will be received at this Office before NOON on the 9th OCTOBER, 1903.

Copies of the Bill of Quantities will be supplied on application to this Office, and the drawings, specification, &c., can be seen here, or at the Watch-room at Walton-on-Naze Coastguard Station.

DIRECTOR OF WORKS DEPARTMENT,
ADMIRALTY,
21, Northumberland Avenue,
London,
W.C.

TO BUILDERS.

TENDERS are invited for the ERECTION of TWO COTTAGES at Shenfield, Essex.

Plans and Specification may be seen on application to Mr. MARSHALL MORRIS, at Shenfield.

Tenders to be delivered to the undersigned not later than SATURDAY, the 26th inst.

The lowest or any Tender will not necessarily be accepted.

LIONEL H. MARSHALL,
Surveyor.

(*Continued on page* xix.)

## SCALE OF CHARGES.

**For Official Advertisements.**

| | Per Line s. | d. |
|---|---|---|
| Competitions, Contracts, all Notices issued by Corporate Bodies, Local and other Boards, Prospectuses of Public Companies, and Trade Paragraph Advertisements (minimum 4s. 6d.) | 0 | 9 |
| Partnerships, Apprenticeships, Land, Sales by Auction, Businesses, Trade and General Advertisements (minimum 2s.) .. .. .. | 0 | 6 |
| **Appointments Wanted or Vacant.** | | |
| Four lines or under (about 30 words) .. .. | 1 | 6 |
| Each Additional Line (about 7 words) .. .. | 0 | 6 |

THREE INSERTIONS FOR THE PRICE OF TWO.

*Advertisements of this class must reach the Offices not later than 5 p.m. on Monday.*

**9, East Harding Street, Fetter Lane, E.C.**

**SUBSCRIPTION, POST FREE,**
**10/10 PER ANNUM,**
**or of any Newsagent or Bookstall,**
**2d. weekly.**

**If you are not already a Subscriber, it will more than repay the small outlay to become one, and thus keep yourselves posted in what is doing in the Architectural and Building world.**

### TO CONTRIBUTORS.

THE EDITOR will be pleased to consider any articles, illustrated or otherwise, dealing with old and new buildings, methods of construction, or other matter of an architectural character. He will also be glad to consider architectural photographs and sketches (the latter preferably in black and white) and measured drawings of work in this country or abroad. News items of interest to architects and builders will also be considered, provided the name and address of the sender are given; no notice will be taken of anonymous contributions. All communications should be addressed to the Editor of THE BUILDERS' JOURNAL, 9, East Harding Street, E.C.

**See Page xx for EMPLOYMENT REGISTER.**

# Tenders.

*Information from accredited sources should be sent to "The Editor" at latest by noon on Monday if intended for publication in the following Wednesday's issue Results of Tenders cannot be accepted unless they contain the name of the Architect or Surveyor for the work.*

*Addressed postcards on which lists of tenders may be stated will be sent post free on application to the Manager,* BUILDERS' JOURNAL, 9, *East Harding Street, E.C.*

**Barking (Essex).**—For the making-up, kerbing, paving and channelling in connection with the Ilford Lane improvement, for the Barking Urban District Council. Mr. C. F. Dawson, surveyor:—

| | | | |
|---|---|---|---|
| J. Smith, Barking | £1,485 | 0 | 0 |
| J. Jackson, Plaistow, E. | 1,445 | 15 | 10 |
| W. Isles, Southend | 1,190 | 0 | 0 |
| B. W. Glenny, Romford | 1,143 | 9 | 0 |
| Parsons & Parsons, Ilford | 1,110 | 0 | 0 |
| Anderson, Poplar | 1,074 | 2 | 1 |
| D. T. Jackson,* Ripple Road, Barking | 1,051 | 18 | 6 |

* Accepted.

**Frystone (nr. Castleford, Yorks).**—For the erection and completion of fifty-two houses and shop at Frystone, near Castleford, for the Wheldale Colliery Co. Messrs. Garside & Pennington, architects, Pontefract and Castleford:—

| | | | |
|---|---|---|---|
| Rainey Brothers, Barrow-in-Furness | £9,950 | 0 | 0 |
| A. Elstub, Liversedge | 9,776 | 2 | 0 |
| E. Martin, York | 9,325 | 0 | 0 |
| T. H. Carr, Selby | 9,365 | 0 | 0 |
| C. A. Howson, Leeds | 9,243 | 0 | 0 |
| Jackson & Dimberline, Goole | 8,449 | 10 | 0 |
| Thompson & Son, Sherburn | 8,230 | 0 | 0 |
| H. Niel & Son, Hull | 8,069 | 0 | 0 |
| W. Wilson & Son, Castleford | 7,873 | 17 | 6 |
| J. & J. Hallewell, Harrogate | 7,850 | 0 | 0 |
| T. G. Wright & Son, Castleford | 7,288 | 10 | 0 |
| Gallagher Brothers, Castleford | 7,278 | 14 | 0 |
| J. Perry, Castleford | 7,203 | 4 | 6 |
| J. Wood & Son, Castleford | 7,093 | 3 | 4 |
| E. Birkhill, York | 6,863 | 0 | 0 |
| H. Molekin,* Park Avenue, Pontefract | 6,724 | 19 | 0 |

* Accepted.

**Guildford.**—For the erection of an underground convenience for both sexes in North Street, Guildford, for the Town Council. Mr. C. G. Mason, borough surveyor:—

| | | |
|---|---|---|
| R. Smith, Bury Fields | £1,298 | 0 |
| A. & F. Gammon | 1;298 | 0 |
| W. G. Edward, Merrow | 1,237 | 0 |
| Tribe & Robinson | 1,205 | 0 |
| R. Wood | 1,182 | 0 |
| Streeters & Todhunter, Godalming | 1,158 | 10 |
| Mitchell Brothers, Shalford | 1,138 | 0 |
| T. Swayne & Son,* Stoke Road | 1,035 | 0 |

* Accepted. [Rest of Guildford.]

**Harrow.**—For the making-up of the following private streets—viz., extension of Springfield Road, extension of Angel Road, Welldon Crescent—for the Harrow-on-the-Hill Urban District Council. Mr. J. Percy Bennetts, engineer and surveyor:—

| | Welldon Crescent. | Springfield Road. | Angel Road. |
|---|---|---|---|
| A. Champniss, Wealdstone | £2,789 | £304 | £245 |
| Wimpey & Co, Hammersmith | 2,770 | 277 | 230 |
| H. Brown, Watford | 2,680 | 280 | 227 |
| J. Meston, London | 2,479 | 277 | 208 |
| T. Adams, Wood Green | 2,452 | 263 | 203 |
| Victoria Stone Co., London | 2,406 | 276 | 204 |
| Free & Sons,* Maidenhead | 2,329 | 249 | 195 |
| [Surveyor's estimate | 2,619 | 265 | 209] |

* Accepted.

**Heywood.**—For the erection and completion of new offices at the Phœnix Brewery, Green Lane, Heywood, for Phœnix Brewery Co., Ltd. Mr. W. E. Gill, architect, Derby Chambers, Fleet Street, Bury. Quantities by architect:—

| | | |
|---|---|---|
| Taylor & Livesey | £2,313 | 0 |
| Sutcliffe Brothers | 2,170 | 0 |
| G. Twelves | 2,100 | 0 |
| D. Diggle | 2,088 | 0 |
| J. Johnson, Bury | 2,050 | 0 |
| J. Inman, Bury | 2,045 | 0 |
| T. Tinline, Bury | 2,000 | 0 |
| Blakeley & Wilde | 1,985 | 0 |
| Thompson & Brierley, Bury | 1,980 | 0 |
| J. Berry | 1,970 | 10 |
| S. Barker,* Pilsworth Road | 1,900 | 0 |

* Accepted. [Rest of Heywood.]

**Ifton Heath (Oswestry).**—For the erection of four cottages at Ifton Heath. Mr. W. H. Spaull, F.R.I.B.A., architect, The Gables, Oswestry:—

| | |
|---|---|
| Coward & Co., Llangollen | £2,100 |
| J. Higgins, Oswestry | 1,341 |
| W. H. Thomas, Oswestry | 1,298 |
| W. Griffiths,* Ellesmere | 1,180 |

* Accepted.

**Kettering.**—For the completion of fourteen private streets and parts of streets within their district, comprising a total length of 3,403yds., for the Urban District Council Mr. T Reader Smith, surveyor:—

| | | | |
|---|---|---|---|
| W. Wilson, Glasgow | £13,217 | 7 | 1 |
| W. H. Pickin, Rickmansworth | 12,250 | 0 | 0 |
| J. C. Trueman, Swanley, Kent | 12,221 | 0 | 0 |
| G. Henson, Wellingborough | 11,742 | 10 | 0 |
| A. Jewell, Market Harborough | 11,665 | 0 | 0 |
| F. Cay, Bedford | 11,159 | 7 | 7 |
| A. Lewin & Son, Kettering | 11,148 | 0 | 0 |
| W. G. Wilmott, Rushden | 10 859 | 0 | 0 |
| Empire Stone Co., Leicester, and J. Barlow, Kettering | 10,632 | 0 | 0 |

**London, E.**—For the erection of a U.M.F. School Church, Higham's Park, E. Messrs. George Barnes & Sons, architects, 5, Clement's Inn, Strand, W.C.:—

| | |
|---|---|
| F. Gough & Co. | £2,364 |
| C. North | 2,313 |
| S. J. Scott | 2,220 |
| Mattock Brothers | 2,200 |
| F. J. Coxhead | 2,139 |
| Battley, Sons & Holness | 2,097 |
| Sands, Palmer & Co.,* 9, Canning Road, Walthamstow | 1,930 |

* Accepted.

**London, S.W.**—For Admiralty Buildings extension, block 3, superstructure, for H.M. Office of Works, &c.:—

| | |
|---|---|
| A. N. Coles | £118,553 |
| J. Ferguson & Co. | 109,000 |
| J. F. Wright | 106,000 |
| Higgs & Hill, Ltd. | 104,400 |
| Leslie & Co., Ltd. | 103,900 |
| J. Chessum & Sons | 102,850 |
| J. Shillitoe & Sons | 102,000 |
| J. Mowlem & Co., Ltd. | 99,650 |
| Perry & Co. | 97,251 |
| Patman & Fotheringham, Ltd. | 93,280 |
| B. E. Nightingale | 92,850 |
| A. Kellett & Sons, Ltd. | 92,740 |
| C. Wall & Co. | 90,950 |
| Holloway Brothers, Ltd, London | 87,700 |

**Lyndhurst (Hants).**—For sewerage works, for the New Forest Rural District Council. Messrs. Combes, W. B. G. Bennett, Son & Berry, engineers, Southampton:—

| | |
|---|---|
| Whettham, Weymouth | £19,179 |
| Neal, Plymouth | 13,697 |
| Braithwaite, Leeds | 12,356 |
| Trim, Dorking | 11,690 |
| Jones & Son, Neath | 11,659 |
| Osenton, Tilehurst | 11,561 |
| Douglas & Richards, Southampton | 11,269 |
| Grace, Southampton | 10,850 |
| Osman, Southampton | 10,797 |
| Saunders & Co., Bournemouth | 10,600 |
| Bell, London | 10,197 |
| Iles, Wimbledon | 10,179 |
| Riley, Cheltenham | 9,893 |
| Streeters & Todhunter, Godalming | 9,696 |
| Dart & Pollard, Paignton | 9,500 |
| Wallis & Co., Eastbourne | 9,458 |
| Westmorland, Daventry | 9,507 |
| Wood,* Bristol | 8,839 |
| Dean, Margate | 8,612 |

* Accepted. [Engineer's estimate, £10,000.]

**Newark.**—For the erection of an infirmary:—

| | | |
|---|---|---|
| Adam, Eastwood & Co., Warsop | £11,928 | 0 |
| Moss & Sons, Loughborough | 11,150 | 0 |
| W. Crane & Co., Nottingham | 11,100 | 0 |
| J. H. Vichers & Co. | 10,940 | 0 |
| Fish & Sons | 10,823 | 0 |
| Brown & Son, Newark | 10,588 | 0 |
| J. H. Williamson & Co., Nottingham | 10,847 | 0 |
| J. Wright | 10,408 | 0 |
| F. Evans | 10,307 | 0 |
| F. Barlow | 10,294 | 0 |
| W. Smith,* Newark | 10,290 | 0 |
| T. H. Harper, Carlton | 9,830 | 0 |

* Accepted. [Rest of Nottingham.]

**Reigate.**—For the excavation, drainage, bricklayer and concrete work required to be done in the construction of bacterial sewage-disposal works at the sewage farm, Earlswood, for the Reigate Town Council. Mr. Fred T. Clayton, borough engineer and surveyor:—

| | | | |
|---|---|---|---|
| S. Kavanagh & Co., Surbiton Hill | £15,542 | 14 | 6 |
| E. Iles, Mitcham | 14,957 | 19 | 2 |
| F. W. Trimm, Dorking | 14,545 | 7 | 2 |
| G. S. Faulkner, Reigate | 14,456 | 15 | 9 |
| Streeters & Todhunter, Godalming | 14,397 | 0 | 0 |
| Davis, Ball & Co., London | 13,275 | 9 | 10 |
| B. Cooke & Co, London | 13,041 | 0 | 0 |
| W. Cunliffe, Kingston-on-Thames | 12,241 | 19 | 0 |
| Braithwaite & Co.,* Newhay, Leeds | 12,189 | 0 | 0 |

* Accepted.

**Scarborough.**—For the erection and completion of an ice factory, engine and boiler-rooms, engine chimney, ice store and cold stores, for the Scarborough Pure Ice and Cold Storage Co., Ltd. Messrs. Freeman, Son & Gaskell, architects, 11, Carr Lane, Hull:—

| | | | |
|---|---|---|---|
| Birkinshaw, Harrogate | £4,820 | 0 | 0 |
| E. Good & Son, Hull | 3,782 | 2 | 9 |
| J. F. Wilson | 3,734 | 0 | 0 |
| R. Cook & Co., London | 3,710 | 0 | 0 |
| J. Bastiman & Son | 3,600 | 0 | 0 |
| Hunter & Smith | 3,564 | 6 | 1 |
| R. Watkinson | 3,472 | 5 | 9 |
| W. T. Petch | 3,452 | 0 | 0 |
| J. Barry & Sons | 3,450 | 0 | 0 |
| Wilson & Bland | 3,370 | 0 | 0 |
| J. Jaram & Son,* 16, Gladstone Street | 3,255 | 0 | 0 |

* Accepted. [Rest of Scarborough.]

**Selly Oak (near Birmingham).**—For the erection of a boiler-house at the workhouse at Selly Oak, for the Guardians of King's Norton Union. Messrs. C. Whitwell & Son, architects, Temple Row, Birmingham:—

| | |
|---|---|
| B. Whitehouse & Sons | £3,145 |
| G. Goodwin, Small Heath | 3,119 |
| W. Sapcote & Sons | 3,098 |
| A. C. Hughes | 2,992 |
| J. Dallow & Sons, Birmingham | 2,980 |
| W. Robinson | 2,920 |
| H. Dorse, Cradley Heath | 2,865 |
| W. H. Gibbs,* King's Heath | 2,840 |

* Accepted. [Rest of Birmingham.]

**Crewe (Cheshire).**—For the paving of the whole of Beech Street part of Pedley Street and part of Market Street with granite setts, within the borough, for the Crewe Town Council. Mr. G. E. Shore, borough surveyor:—

| | Beech Street. | | | Market Street (part of). | | | Pedley Street (part of). | | |
|---|---|---|---|---|---|---|---|---|---|
| T. Tucker, Burslem | £2,457 | 8 | 8 | £661 | 0 | 6 | £522 | 17 | 5 |
| W. Harris, Shrewsbury | 2,282 | 0 | 4 | 608 | 5 | 2 | 479 | 15 | 4 |
| R. Finnegan, Northampton | 2,119 | 4 | 8 | 583 | 6 | 4 | 465 | 2 | 8 |
| Bennie & Thompson,* Warrington | 2,035 | 18 | 6 | 544 | 13 | 7 | 443 | 2 | 3 |

* Accepted.

**Stourbridge.**—For the erection of Stourbridge Workhouse:—

| | | | |
|---|---|---|---|
| C. A. Horton, Brierley Hill | £143,224 | 0 | 0 |
| W. Pattinson, London | 123,243 | 0 | 0 |
| J. Hutchinson, Nottingham | 112,400 | 0 | 0 |
| H. Dorse, Cradley Heath | 110,000 | 0 | 0 |
| W. H. Gibbs, King's Heath | 109,900 | 0 | 0 |
| J. H. Vickers & Co., Nottingham | 109,815 | 17 | 5 |
| J. Guest & Son, Amblecote | 109,300 | 0 | 0 |
| Willcock & Co., Wolverhampton | 108,775 | 0 | 0 |
| Fish & Sons, Nottingham | 106,352 | 0 | 0 |
| W. Hopkins, Birmingham | 104,000 | 0 | 0 |
| H. Vickers & Son, Nottingham | 103,000 | 0 | 0 |
| Hadley & Sons, Old Hill | 102,700 | 0 | 0 |
| J. Dallow & Son, Blackheath | 99,900 | 0 | 0 |
| W. Crane & Co., Nottingham | 99,500 | 0 | 0 |
| Moss & Son, Loughborough | 97,885 | 0 | 0 |
| F. Evans,* Nottingham | 95,550 | 0 | 0 |

* Accepted.

**Stourbridge.**—For the erection of Cottage Homes:—

| | |
|---|---|
| C. A. Horton, Brierley Hill | £14,783 |
| W. Pattinson, London | 12,243 |
| Vickers, Nottingham | 12,170 |
| Simmons, Stourbridge | 12,000 |
| J. A. Meredith, Furlong Lane | 11,964 |
| G. H. Marshall, Smethwick | 11,700 |
| T. Hardy, West Bromwich | 11,395 |
| H. Dorse, Cradley Heath | 11,150 |
| Hutchinson, Nottingham | 11,100 |
| W. North, Stourbridge | 10,981 |
| Willcock & Co., Wolverhampton | 10.970 |
| J. & A. Brazier, Bromsgrove | 10,9 0 |
| W. Crane, Nottingham | 10,900 |
| W. H. Gibbs, King's Heath | 10,900 |
| J. Guest & Son, Amblecote | 10,800 |
| J. Dallow & Son, Blackheath | 10,550 |
| Moss & Son, Loughborough | 10,456 |
| Fish & Son, Nottingham | 10,356 |
| Hadley & Son, Cradley Heath | 10,205 |
| Griffiths,* Lye, Stourbridge | 10,180 |
| F. Evans, Nottingham | 10,100 |
| W. Hopkins, Birmingham | 10,000 |
| Vickers & Son, Nottingham | 9,800 |

* Accepted.

**Tendring.**—For sewer extension at Lawford, for the Rural District Council. Mr. H. H. Ricker, F.I.A.S., surveyor, Dovercourt Bay:—

| | |
|---|---|
| W. E. Capon | £125 |
| Parson & Son | 112 |
| H. Rose | 110 |

**Two Mile Hill (near Bristol).**—For the erection of the Bell Inn, Two Mile Hill. Messrs. C. & C. Thampson, architects, Nicholas Street, Bristol. Quantities by Mr, G. H. Pearson:—

| | Main building. | Boundary walls. |
|---|---|---|
| J. James | £2,880 | £220 |
| H. A. Forse | 2,825 | 235 |
| Jones & Hill | 2,650 | 235 |
| M. Durnford | 2,625 | 195 |
| F. Chown | 2,519 | 230 |
| Eastabrook & Sons | 2,500 | 218 |
| E. Love | 2,437 | 263 |
| S. Williams | 2,370 | 180 |
| A. E. Denby & Co.* | 2,299 | 229 |

* Accepted. [All of Bristol.]

**Wendover (Bucks).**—For the erection of a new Congregational Church, Wendover. Mr. G. Luckett, F.I.A.S., architect, Aylesbury:—

| | | | |
|---|---|---|---|
| Orchard & Sons, Banbury | £2,112 | 0 | 0 |
| Gibson & Sons, Wycombe | 2,086 | 0 | 0 |
| Hunt & Sons, Wycombe | 2,075 | 0 | 0 |
| G. Darlington, Amersham | 2,070 | 0 | 0 |
| G. & J. Waterman, Watford | 2,059 | 0 | 0 |
| Holland & Sons, Wendover | 2,058 | 0 | 0 |
| Garside & Sons, Leighton | 2,050 | 0 | 0 |
| F. J. Rust, Chesham | 1,970 | 0 | 0 |
| C. Brightman, Watford | 1,963 | 0 | 0 |
| H. Flint, Wycombe | 1,962 | 0 | 0 |
| J. Harris, Wycombe | 1,957 | 0 | 0 |
| G. Tombs & Sons, Buckingham | 1,734 | 18 | 11 |
| F. Booth, Banbury | 1,724 | 10 | 1 |
| Senior & Clarke, Wendover | 1,676 | 16 | 6 |
| B. Holland & Sons, Thame | 1,672 | 0 | 0 |
| J. Holland & Sons, Waddesdon | 1,620 | 0 | 0 |

---

**To Lay the Dust.**—A demonstration was given last week at Windsor of a new process for abating the nuisance of dust on the high roads. About 200yds. of the Old Windsor or Albert Road had been treated with the new mixture called "Westrumite," after its inventor, Her van Westrum, the remainder of the road being left in its usual condition. Several motor-cars raced along the road at very high speeds, raising the usual clouds of dust on the untreated portions but failing to produce the smallest puff while passing over the sprinkled area. The inventor claims that one application of a 10 per cent. solution would in ordinary cases render roads dustless for six or even ten weeks, according to the nature of the traffic and the state of the weather. The cost is stated to be about one farthing per sq. yd. for the first application, and half that amount subsequently. "Westrumite" is an oily substance, made soluble in water by the inventor's special process, and can be used in an ordinary watering-cart. It does not freeze in winter, and in nowise injures but rather improves the surface of roads.

## Contracts Open—(*Continued from page* xvii).

HULL.

Persons desirous of TENDERING for the various works required in the ERECTION of the EAST RIDING OF YORKSHIRE IMPERIAL YEOMANRY RIDING SCHOOL at Hull for the O.C., Lieut.-Colonel Lord WENLOCK, V.D., are requested to forward their names to me on or before OCTOBER 1st with a deposit of One Guinea (which will be returned upon the receipt of a bonâ fide Tender) when bills of quantities will be forwarded.

Plans can be seen at my office after the above date.

The lowest or any Tender not necessarily accepted.

A. EDWARD THOMPSON,
Architect and Surveyor,
Manor Street, Hull.

September 19th, 1903.

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**FERRO-GALLIC PRINTS**

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London Show Rooms:
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Manchester Show Rooms:
37, Cross Street.
Glasgow Show Rooms:
96, Renfield Street.

THE
**LOCAL GOVERNMENT JOURNAL,**
Estab. as THE METROPOLITAN in 1872.

This Journal, established in 1872, furnishes List of
TENDERS OPEN,
FORTHCOMING WORKS,
SITUATIONS VACANT,
Under Public Bodies, and gives all information concerning Local Self-Government.
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## Competition Open.

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PROPOSED RE-CONSTRUCTION OF THE WAKEFIELD CATTLE MARKET.

The Governors invite DESIGNS in competition for proposed RE-CONSTRUCTION of the WAKEFIELD CATTLE MARKET.

Premiums, 50 guineas and 25 guineas, will be offered for the first and second selected designs respectively.

The 50-guinea premium to be merged in the commission in the event of the person sending in the first selected design if employed to supervise the carrying out of the works.

The necessary works are in pursuance of an Order of the Board of Agriculture, dated the 23rd of June, 1903, and also for the purpose of re-construction as necessary.

An estimate of the probable cost of carrying out the design will be required, and economy in the design will be largely taken into consideration.

Designs to be sent in before the 1st day of DECEMBER next.

Instructions to competitors, with an Ordnance Sheet Plan of the present Market and available adjoining land, may be obtained on application to the undersigned on payment of a deposit of £2, which will be returned on receipt of a bonâ fide design.

R. ERNEST LANGHORNE, Solicitor,
Wakefield,
Clerk to the Governors.

READ
The WANT Advertisements
On Pages xvi & xvii.

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LEEDS.
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## Property and Land Sales.

*The charge for Advertisements under this heading is 2s. per insertion not exceeding four lines, and 6d. per line after.*

Re MESSRS. CADMAN & SON. IN BANKRUPTCY. —No. 45, HAMPSTEAD ROAD, N.W., on the west side, close to Tottenham Court Road and Euston Road. —Extensive Business Premises, with a ground area of about 7,500 square feet, together with the valuable modern plant and machinery of a first-class shop fitter and show case maker. In One lot. With possession. —Messrs.

DEBENHAM, TEWSON, FARMER and BRIDGEWATER will SELL, by Order of the Trustee, C. F. ELLES, Esq., at the MART, on TUESDAY, OCTOBER 13th, at TWO, the Capital BUSINESS PREMISES, 45, Hampstead Road, comprising a substantial building of three light and lofty floors, used as workshops, each about 100 ft. by 20 ft., a newly-erected workshop, about 66 ft. by 21 ft. 6 in., six private and clerks' offices, and yard, also the modern plant and machinery. The premises are held for 22¾ years unexpired, at the low rent of £170 per annum, and are adapted for cabinet or pianoforte makers, shop fitter, decorator, builder, or for any trade or business requiring a large floor space combined with good lights.—Particulars of Messrs. BRABY & MACDONALD, Solicitors, 5, Arundel Street, Strand; of Messrs. ELLES, SALAMAN & Co., Chartered Accountants, 1, Oxford Court, Cannon Street; and of the Auctioneers, 80, Cheapside, E.C.

By Order of the Governors of St. Bartholomew's Hospital. —CITY OF LONDON.—In a fine position between St. Paul's Churchyard and Queen Victoria Street, a valuable and commanding corner Site occupying an area of about 4,580 square feet, having a frontage of about 57 ft. 3 in. to Godliman Street, a corner splay of about 6 ft., and a return frontage of about 92 ft. 6 in. to Knightrider Street, especially well lighted and adapted for the erection of first-class warehouses, offices, or other business premises.—Messrs.

DEBENHAM, TEWSON, FARMER and BRIDGEWATER are instructed to LET by AUCTION, at the MART, on TUESDAY, OCTOBER 20th, at TWO, on a lease for a term of eighty years, direct from the Freeholders, the very compact and important corner Site of Nos. 15, 17, and 19, Godliman Street, and Nos. 24, 24a, 26, and 28, Knightrider Street, in the City of London, within about eighty yards of St. Paul's Churchyard, and about forty yards of Queen Victoria Street. — Particulars and plans of Messrs. WILDE, MOORE & WIGSTON, Solicitors, 21, College Hill, Cannon Street; of Messrs. E. I'ANSON & SON, Architects and Surveyors, 7a, Laurence Pountney Hill; at the Clerk's Office, St. Bartholomew's Hospital; and of the Auctioneers, 80, Cheapside, E C.

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MR. F. WARMAN will SELL at MART, E.C., on SEPTEMBER 29th, the imposing residence, No. 17, Highbury Crescent, N., 18 magnificent rooms, bath, ample offices, large attractive garden, with frontage of 200 ft. to Highbury Crescent West, modern drainage.—Solicitors, Messrs. LEWIS & SON, 7, Wilmington Square, W.C. Auction Offices: Highbury Corner, N.; 75, Crouch End Hill, N.; 66, Chancery Lane, W.C. Tels. 1 North and 1405 Hol.

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THE MANAGER, BUILDERS' JOURNAL,
9, EAST HARDING STREET, FETTER LANE, E.C.

# BUILDERS' JOURNAL EMPLOYMENT REGISTER.

We inaugurated last week a new and original feature, which we trust will still further add to the usefulness of this Journal. It is our constant endeavour to make THE BUILDERS' JOURNAL more helpful to the constructive professions and trades. Regular subscribers will remember we have of recent years introduced various features, such as our Enquiries Columns, Lists of Bankruptcies, Current Prices, New Companies, Contracts and Competitions Open, all with the object of advancing the material welfare of our readers.

We are sure that this present scheme will supply a long recognised need, and will bring together Employer and Employed, to their mutual advantage, thus still further adding to the interest and benefits of THE BUILDERS' JOURNAL.

**The Employer.**—In the building trades there must necessarily be "mobility of labour," and when a rush of work comes an employer suddenly finds himself in urgent need of employees. Our scheme is designed to assist him by extending his means of supply and making it more quickly available.

**The Employee,** by the same means, will not be kept so long out of employment. He cannot afford to regularly advertise. After the week in which his advertisement appears it is lost for ever. By our new scheme we sustain these advertisements for six weeks.

We have opened a **Register of Appointments Wanted,** with the double object of aiding both Employer and Employed to closer intercommunication. The particulars of all advertisers who take three insertions in our "Appointments Wanted" columns will be kept on this Register for six weeks without extra charge, *i.e.,* for 3/- we will give three insertions of any "Wanted" advertisement (four lines), and also six insertions in the "**Employment Register.**"

## THUS FOR 3/- WE WILL ADVERTISE YOU FOR SIX WEEKS.

**Instructions.**—The Employment Register will be classified in trades. All advertisers who desire to avail themselves of the advantages of this Register must furnish their names and full addresses, which will not be published, but a number will be assigned to each for identification. All communications will be treated in the strictest confidence. Employers should address letters to the numbers, and their letters will be immediately forwarded to the advertisers.

The following abbreviations are employed in the Register :—s., salary required ; ex., experience ; refs., references ; yrs., years.

### ACCOUNTANT.

1. London, W.—Accountant, wide ex., will open & keep builders' books.

### ARCHITECTS' ASSISTANTS.

2. Crouch End, N.—Junior Assistant, good refs., accurate draughtsman, levelling, surveying.
3. Haltwhistle.—Junior Assistant, student R.I.B.A.
5. Nottingham.—Architectural Assistant. 5 yrs. ex. (3 yrs. articles). Working drawings, details, surveying, &c.
6. Harlesden, N.W.—Architectural Assistant. 14 yrs. ex. Good refs. Working drawings, details, specifications. Hospital and asylum work.
25. Nuneaton.—Junior Assistant. Engagement wanted in Midlands.
26. London, N.W.—Assistant. 6 yrs. ex. Good refs. s. 35s.

### CARPENTERS & JOINERS.

9. London, N.—Stair & Rail Hand, good refs., hour or piecework.
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12. York.—Clerk of Works, long varied ex., good refs. Structural steelwork, concrete, brick or stone.
13. West Norwood.—Clerk of Works. Age 45. First-class refs. Thoroughly practical. Just finished large job in London.

(*Continued on next page.*)

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# THE BUILDERS' JOURNAL

## AND ARCHITECTURAL RECORD.

September 30, 1903. Vol. 18, No. 451. 9, East Harding Street, E.C.

### The Delay with Vauxhall Bridge.

EVERYTHING nowadays is phenomenal. If the temperature rises somewhat high, we are told it is the hottest day for fifty years; if it rains, we are experiencing the wettest season for more than a decade. We have not yet seen the statement in print, but it would only be natural that someone should draw attention in large type to the phenomenal delay with the rebuilding of Vauxhall Bridge. It seems so long ago since the aërial carrier was set up over the river that the following paragraph might well be read as applying to the present: "Vauxhall Bridge.—This long-delayed bridge is at last contracted for and begun upon. Colonel Baynton, in conjunction with Mr. Grillier, has undertaken to complete, under due securities, for the sum of £75,000. One pier is already laid, and the manner of doing it is equally novel and ingenious, and, if successful, will form a model for all future bridges. It is to be entirely finished in two years. All the upper parts of the bridge are to be of cast-iron." This, however, is simply another repetition of history; for the paragraph appeared in the "Globe" for September 25th, 1812!

### M. Coquelin's Theatre.

MANY actors have had ideas about a new theatre in which the fire hazards would be reduced to a minimum; Sir Henry Irving, to wit, whose scheme is shown by a drawing now to be seen at Earl's Court Exhibition. M. Coquelin, however, is the latest innovator, and he has gone so far with his idea that the plans for his new theatre, prepared by M. Vinet, have been completed, and the building is about to be commenced at the home for aged actors at Pont-aux-Dames. From the particulars which have been vouchsafed us, it appears that the eminent French actor has quite set aside all precedent and devised his theatre like a three-decker American excursion steamer! The boxes are to be in the pit; the stalls above them; and over these the gallery. With such an arrangement it will be apparent that, as ordinarily understood, the gallery might afford an admirable view of the dusty embellishments over the "gridiron," but nobody in that part could see the stage. But M. Coquelin's stage is quite a new affair. It is to be entirely separated from the rest of the theatre, after the Roman fashion, we are told; though as ground rents in the time of Nero were not quite what they are in the Strand just now, we fear the large space required between the stage and the auditorium proper rather vitiates the claim that this is to be a model for all future theatres. M. Coquelin is quite confident about the safety from fire which his building will afford. At the end of the first performance the three hundred occupants of the seats will be asked to withdraw while the scenery is set ablaze, and while M. Coquelin and his architect stand watching the flames! Whatever happens it is certain that if the fire does not bring down the house, M. Coquelin will.

### Newgate.

DURING the excavations at Newgate a most interesting section of the old Roman Wall, dating back about A.D. 300, has been brought to light. The wall, which runs through the centre of the site of the old gaol, and extends from the Sessions House to Newgate Street, is about 15ft. high and 9ft. wide, and is in a perfect state of preservation. For the purposes of the new building the whole of the wall will have to be demolished. An entrance was recently effected into a subterranean vault running at a considerable depth beneath Newgate Street. Here an archway exists which is believed to have belonged to the old Newgate of Dick Whittington's time. Underground passages run from the vault in a northerly direction, but they were converted into sewers at some remote period. In the centre of the ruins the workmen have come upon what is undoubtedly the original Newgate well, which was in olden times the main water-supply for the gaol. It is about 140ft. deep. In the meantime rapid and satisfactory progress is being made with the important task of putting in the footings for the new Sessions House.

### Testing a Skylight.

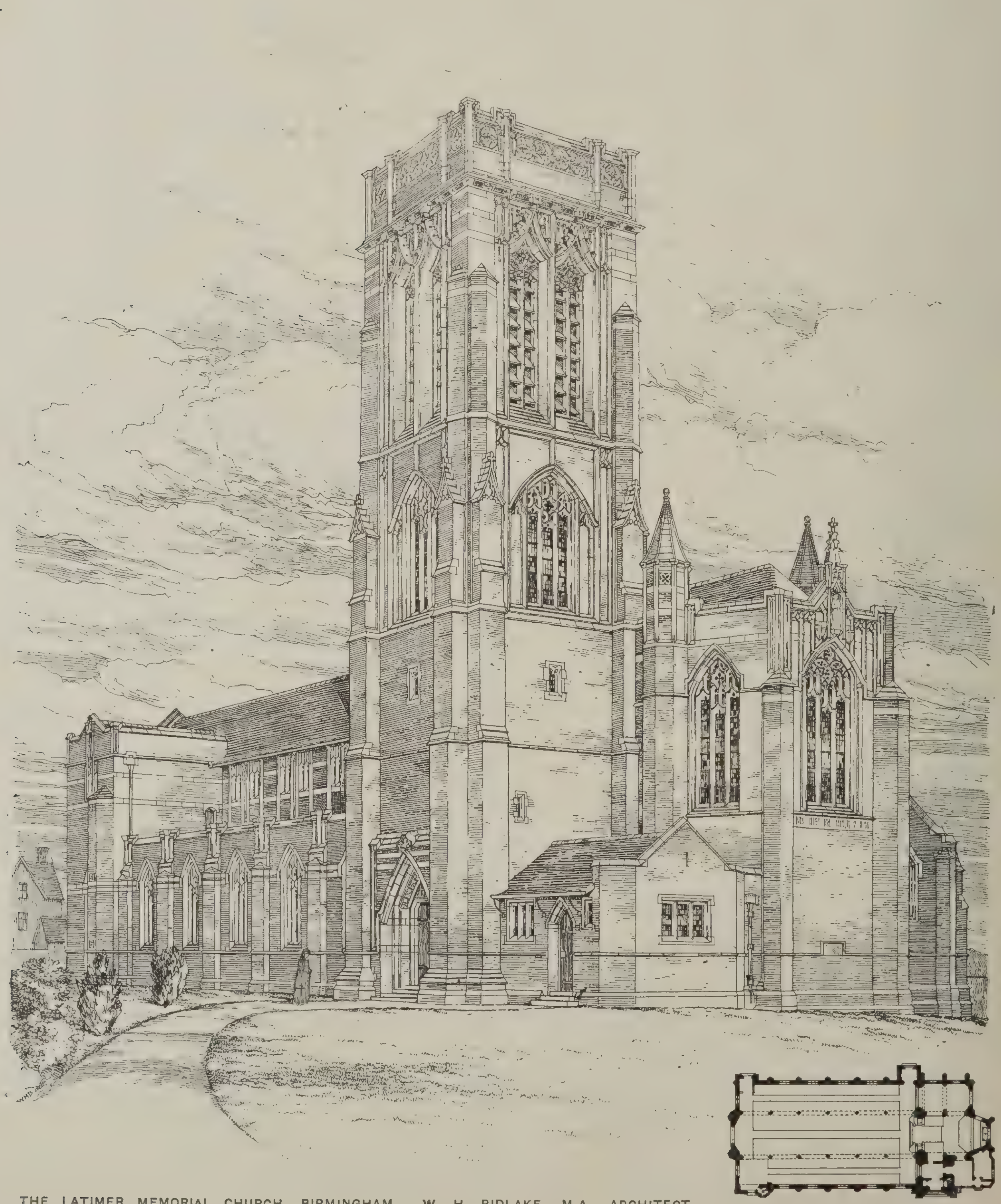
IT will be remembered that a dummy column and entablature were erected on the new Gaiety Theatre in order to see how they looked in position, as being part of the colonnade which forms the chief feature on the Strand front. The practice has often been followed, but we have not before heard of a similar test being made with the skylight for a picture gallery, as done in the case of the new Boston Museum of Fine Arts. The skylight is movable and has been erected about 50ft. above the site: its purpose is to determine the best position, and the best lighting, for the skylight of the future picture gallery. In a similar way the German Government, before constructing the new Parliament House in Berlin, had a full-sized model made in wood and plaster of the assembly hall, as shown in the architect's designs, in order to study its acoustic qualities before carrying it into execution. There can be no doubt that the trouble thus taken is well repaid. Defects not apparent on paper are discovered and can be corrected, and improvements in detail are often suggested.

### In the Future.

THAT the motor car must inevitably supersede the horse for all city traffic has long been apparent; nevertheless it is not to be the final means of locomotion so far as men and women are concerned. We have no thought of an Age of Airships. On the contrary we come down to earth. The motor car is to be superseded in large measure by what we will call the motor skate. The city man of the future will carry roller skates on his boots, each driven by a small electro-motor. He will rush along the pavements (or will a special track be provided for him?) with his finger on a button controlling the current from a very compact generator. On arrival at his office he will quickly unfasten the skates and, for the time being, will lapse back to the primitive method of walking about, like any man of the nineteenth century.

### Architecture in September.

SEPTEMBER is the month in which architecture is best seen. The present is not perhaps all that a late summer season should be, but in normal years the ninth month—historically the seventh, as its name, given by the Romans, implies—is that in which buildings great and small, public and domestic, are viewed in their most attractive aspects. The absence of great heat and glare renders sight-seeing easy and pleasant; the eyes are less strained, physical fatigue is less than during the heat of full summer; the clearness of the sky, the occasional light clouds, the distant objects which can be easily seen—are all favourable; above all, architectural features stand out with singular distinctness. The outline of lofty towers and spires, the effect of columns as lines of high light against hollow masses of shade, the sharpness of carved ornament under projecting surfaces as in many parts of St. Paul's, the emphasis of a great cornice, the gracefulness of any recessed feature like a loggia or a gallery – all are best seen in September. On the Continent the traveller finds the height of summer oppressively hot in Paris, and worse in the Italian cities; the autumn gives him (and gives the student especially) all that he can desire in weather, sun and sky. In Paris at such a time the colour and texture of the stone, mainly from the quarries of Creil, a light creamy grey as yet but little touched by smoke, though unfortunately the process of injury has begun owing to the increase of coal fires and of factories in the suburbs; the light strong balconies of graceful ironwork, the pilasters, the carved wreaths, the masks, which still survive from the old French Renaissance – all look their best. This is the time also to see the old cities of Flanders and Brabant. The picturesque rather than the grand stands before us, and what but a September sky could give free play to the beauty of the marvellous Grande Place of Brussels, with its elaborate Burgundian and Renaissance halls, its gilded mullions and quaint "frontispiece" gables, each one bearing the symbol of an old Trade Guild? But we need not go abroad for beauty. When can the view of Oxford from the Radcliffe or the tower of New College be better seen than in September? When can the ever-changing views of the colleges at Cambridge from "the backs" be seen in greater beauty? – the clever contrasts of Gothic and Palladian, the subtle harmonizing of different styles, Clare, and King's with its vast chapel, and Trinity; what more can the artist wish for? Perhaps, after all, the most notable feature in our English scenes is the green luxuriant foliage which frames so many of our older buildings. To enjoy this too in comfort, to appreciate the red brick farms, the red tiles and black shingles, the cottages and inns, the outward signs of the old insular life which still survive – all this is the special privilege of September.



THE LATIMER MEMORIAL CHURCH, BIRMINGHAM. W. H. BIDLAKE, M.A., ARCHITECT.

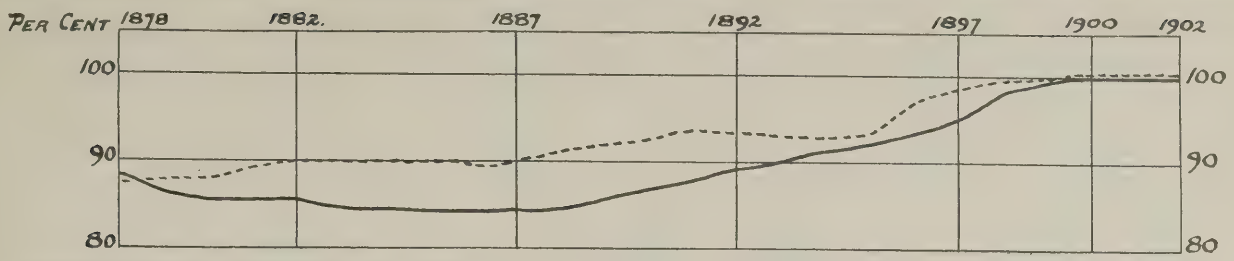


DIAGRAM SHOWING FLUCTUATIONS IN WAGES IN THE BUILDING AND ENGINEERING TRADES OF THE UNITED KINGDOM, THE YEAR 1900 BEING TAKEN AS THE STANDARD OF COMPARISON. (Building: Thick line. Engineering: Dotted line.)

# THE BUILDING TRADES.

### Comparative Tables of Wages at Home and Abroad.

THE Board of Trade blue-book from which we compiled the comparative tables relating to the import and export of building materials, published in our issue for last week, also contains a number of figures as to the wages of building trade workmen in various countries.

As pointed out in some prefatory notes, we may approach the question of comparative wages from two entirely different standpoints, leading to divergent and, sometimes, even to opposite conclusions. We may either seek to compare the material well being of the wage-earners, or the wages cost of a given amount of work. From the former point of view we are mainly interested in the average money income of the wage-earning population, modified, of course, by differences in cost of living, but irrespective of differences in the efficiency of labour. If a bricklayer in France earns half the weekly wages of a bricklayer in America, we should say his money wages were half as great, although, conceivably, the American might lay so many more bricks per hour that his labour might be even cheaper to his employer.

From the second point of view we are interested, not in the weekly income of the labourer, but in his wages regarded as an item in the cost of production, *i.e.*, the wages cost of laying a hundred bricks.

How entirely divergent are the above two methods of comparison will be realized from the fact that competent American economists are of opinion that in the United States the average "labour cost" of a given volume of production is at least as low as in Europe, if not lower, while the average income of the working classes is certainly higher in America than in any European country. However this may be, it is clear that the real cost of labour varies much less from country to country than the level of weekly wages or of yearly earnings, and that a high labour cost is compatible with low wages and *vice versâ*, owing to the variations in the efficiency of labour.

For example, if we merely compared wage rates for identical skilled occupations (*e.g.*, for carpenters, bricklayers, and so forth) in America and the United Kingdom we should arrive at the conclusion that American wages are not far from double those prevalent in this country. If, on the other hand, we compared the average rates for all workmen engaged in certain large groups of trades (iron, textile, building, &c.) we should find that though American wages are considerably higher than English they are very far from being double. The chief explanation of the difference is that the prevalence of high rates of wages leads to increased sub-division and graduation of labour, so that the proportion borne by the more highly paid to the less highly paid classes will naturally be smaller in a country where the general level of wages is very high than where wages are generally low.

**America.**

The following table shows the wages in the building and stone trades in the United States from 1840 to 1900, expressed as percentages of the wages in 1900:—

| Year. | Building Trades. | Stone Trades. |
|---|---|---|
| 1840 - - | 48·2 | 50·8 |
| 1850 - - | 48·9 | 59·2 |
| 1860 - - | 56·7 | 63·2 |
| 1870 - - | 105·1 | 106·8 |
| 1880 - - | 80·9 | 81·4 |
| 1890 - - | 97·9 | 102·4 |
| 1896 - - | 98·3 | 99·5 |
| 1897 - - | 98·2 | 99·4 |
| 1898 - - | 100·3 | 99·4 |
| 1899 - - | 97·8 | 98·6 |
| 1900 - - | 100·0 | 100·0 |

**France.**

WAGES EXPRESSED AS PERCENTAGES OF THOSE IN 1900.

| Year. | Stonecutter. | Rough Caster. | Slater. | Joiner. |
|---|---|---|---|---|
| 1806 - - | 38 | — | 65 | 50 |
| 1828 - - | 41 | — | — | 48 |
| 1842 - - | 49 | 39 | 65 | 46 |
| 1852 - - | 50 | 42 | 79 | 50 |
| 1862 - - | 65 | 58 | 82 | 64 |
| 1873 - - | 65 | 62 | 88 | 71 |
| 1880 - - | 88 | 83 | 100 | 100 |
| 1896 - - | 118 | — | 105 | 129 |
| 1899 - - | 94 | 100 | 100 | 100 |
| 1900 - - | 100 | 100 | 100 | 100 |
| 1901 - - | 100 | — | 100 | 122 |

WAGES OF CARPENTERS AND BRICKLAYERS' LABOURERS (IN PENCE PER HOUR).

| Year. | London. | | Manchester. | | Birmingham. | | Newcastle. | Belfast. | Glasgow. | |
|---|---|---|---|---|---|---|---|---|---|---|
| | C. | B.L. | C. | B.L. | C. | B L. | C. | C. | C. | B.L.* |
| 1872 - | 8 | — | $7\frac{1}{4}$ | — | $6\frac{1}{2}$ | — | $6\frac{3}{4}$ | 5s. per day | $6\frac{1}{2}$ | — |
| 1882 - | 9 | — | 8 | — | $7\frac{3}{4}$ | — | $7\frac{1}{4}$ | $6\frac{3}{4}$ | 7 | — |
| 1883 - | — | 6 | — | $5\frac{1}{2}$ | — | 5 | — | — | — | 5 |
| 1892 - | 9 | $6\frac{1}{2}$ | $8\frac{1}{2}$ | 6 | $8\frac{1}{2}$ | $5\frac{1}{2}$ | $8\frac{1}{2}$ | $7\frac{1}{2}$ | $8\frac{1}{2}$ | $5\frac{1}{2}$ |
| 1900 - | 10 | 7 | $9\frac{1}{2}$ | 6 | $9\frac{1}{2}$ | $6\frac{1}{2}$ | 10 | $8\frac{1}{2}$ | 10 | $5\frac{1}{2}$ |
| 1901 - | 10 | 7 | $9\frac{1}{2}$ | 6 | $9\frac{1}{2}$ | $6\frac{1}{2}$ | 10 | $8\frac{1}{2}$ | 10 | $5\frac{1}{2}$ |
| 1902 - | $10\frac{1}{2}$ | 7 | $9\frac{1}{2}$ | 6 | $9\frac{1}{2}$ | $6\frac{1}{2}$ | 10 | $8\frac{1}{2}$ | 10 | $5\frac{1}{2}$ |

* Masons' labourers.

TABLE OF WAGES, THE YEAR 1900 BEING TAKEN AS THE STANDARD OF COMPARISON.

| Year. | United Kingdom. | France. | | | | Germany. |
|---|---|---|---|---|---|---|
| | Bricklayers, Carpenters and Joiners, and Masons. | Masons. | House Painters. | Carpenters. | Plumbers. | Building Trades in Berlin. |
| 1872 - | — | 72 | 72 | 66 | 74 | 77 |
| 1882 - | $85\frac{1}{2}$ | 86 | 85 | 76 | 83 | 55 |
| 1892 - | $88\frac{9}{10}$ | 94 | 97 | 83 | 98 | 103 |
| 1900 - | 100 | 100 | 100 | 100 | 100 | 100 |
| 1901 - | 100 | 100 | 100 | 100 | 100 | — |
| 1902 - | 100 | — | — | — | — | — |

AVERAGE CURRENT WEEKLY WAGES DURING SOME RECENT YEARS.

| — | United Kingdom. | United States of America. | Germany. | France. | Russia. | Belgium. |
|---|---|---|---|---|---|---|
| Masons: | s. d. | s. d. | s. d. | s. d. | s. d. | s. d. |
| Capital - - | 43 9 | 120 0 | — | 34 7 | — | — |
| All other towns - | 39 $2\frac{1}{4}$ | 84 $4\frac{1}{2}$ | 27 6 | 21 7 | — | — |
| Carpenters and Joiners: | | | | | | |
| Capital - - | 43 9 | 82 7 | 25 1 | 40 10 | 19 0 | 16 10 |
| All other towns - | 38 3 | 73 4 | 21 $7\frac{1}{2}$ | 23 6 | — | — |
| Plumbers: | | | | | | |
| Capital - - | 43 1 | 93 3 | — | 36 0 | — | — |
| All other towns - | 38 3 | 93 9 | — | 21 $7\frac{1}{4}$ | — | — |
| Plasterers: | | | | | | |
| Capital - - | 45 10 | 106 7 | — | — | — | — |
| All other towns - | 39 3 | 87 6 | 27 6 | 21 9 | — | — |
| Painters: | | | | | | |
| Capital - - | 36 $5\frac{1}{2}$ | 87 3 | — | 34 7 | — | — |
| All other towns - | 35 $0\frac{3}{4}$ | 73 3 | — | 21 7 | — | — |

### England and Wales.

The following table shows the number of persons in England and Wales engaged in the building trades during the five past decades:—

| Year. | Men. | Women. | Total. |
|---|---|---|---|
| 1851 - | 398,029 | 727 | 398,756 |
| 1861 - | 471,316 | 906 | 472,222 |
| 1871 - | 581,903 | 1,116 | 583,019 |
| 1881 - | 685,112 | 1,887 | 686,999 |
| 1891 - | 698,839 | 2,445 | 701,284 |
| 1901 - | 945,184 | 691 | 945,875 |

## Enquiries Answered.

*The services of a large staff of experts are at the disposal of readers who require information on architectural, constructional or legal matters. Questions should in all cases be addressed to the Editor. The querist's name and address must always be given, not necessarily for publication.*

### Architectural Details and Drawings.

HORSHAM.—W. T. J. writes: "In what issues of THE BUILDERS' JOURNAL did the following articles appear?:—(1) 'Design and Detail of Domestic Buildings,' by Mr. John E. Newberry; (2) 'Bay Windows,' a paper by Mr. Paul Waterhouse; is this paper illustrated? (3) 'Foundations,' by Mr. A. T. Walmisley (a paper read before the A.A.); (4) drawings of roof, &c., of library at Lambeth Palace; (5) drawings of Hampton Court Palace."

(1) March 23rd, May 25th and July 6th, 1898, and January 4th, 1899. (2) November 30th and December 7th, 1898 (one illustration). (3) May 25th, June 8th and July 1st, 1898. (4) January 26th and July 6th, 1898. (5) February 9th, 16th and 23rd, June 1st and July 27th, 1898.

### Establishing a Practice.

LONDON, S.E.—ENQUIRER writes: "What would be likely places within one hundred miles of London where a young architect might seek a chance of establishing himself in a small practice?"

In answering such an enquiry as this we can only give general advice. Work does not generally come the way of an architect until he has been established some time, until he is known and has made a reputation, unless he has considerable personal influence. The first work, except that obtained in open competition, is usually obtained in this country through friends, though if an architect is accomplished he will very soon make a name for himself and not have to look around much. There are many places near London where openings might be found, more especially in the rapidly extending suburbs, but it may be taken for granted that one or more firms of auctioneers and surveyors, &c., are already established in these localities: inevitably, however, the work must become too much for them to cope with alone, and it is then the opportunity for the new man occurs. It would be unwise to go to any place quite close to town; we would advise you to keep ten or more miles out. In the nearer parts clients usually seek an architect in the centre of London, where most business work is naturally done. Clients usually have business in the city and generally go to an architect there; and an architect a short distance out, to make it profitable, usually finds it necessary to combine with his architectural work one or more of the allied businesses of house and estate surveyor, agent and auctioneer, which help to attract architectural business.

### Fireproof and Sound-proof Partitions.

FARNCOMBE.—W. W. J. C. writes: "(1) Where can I find particulars about fireproof and sound-proof partitions? (2) Kindly work out the accompanying questions, set in the last June R.I.B.A. examination."

(1) There are so many and such various fireproof partitions on the market that you will not be able to obtain full particulars from any book; but you can obtain particulars from the manufacturers. "Specification No. 6" will instruct you in the points to look for in deciding on their advantages. Several tests with partitions have been made by the British Fire Prevention Committee, and are published in the booklets issued by them, price 1s. each; or their full series of tests of all kinds may be obtained from "Facts on Fire Prevention," edited by Edwin O. Sachs, price 25s. post free from these offices. An article on a series of tests with partitions made to determine their sound-resisting qualities was published in our issue for October 29th, 1902. One of the best sound- and fire-proof partitions consists of two thicknesses of 2in. "Mack" slabs or slag-wool slabs, with a layer of slag-wool filling the 1in. cavity between them. (2) We cannot undertake to answer such examination questions as these; consult the text-books on building construction.

### Flat Roofs for Houses.

KENT.—A. M. S. writes: "(1) For the sake of economy, I am thinking of putting flat roofs on a row of houses. What material would be most suitable and durable? (2) It is possible that the houses may be in danger of flooding by the sea during erection, from a breach in the sea wall. Can I take any steps to protect the owner from loss? Of course I am inserting a clause in the specifications throwing all responsibility for loss in case of accident on the contractor and requiring insurance, but this will not, I think, cover damage by the sea."

(1) We suggest flat galvanized iron sheets tarred and sanded for a cheap roof, or concrete and asphalt for a better but more expensive roof. (2) You can insure against the risk of flooding with most insurance companies, such as the Ocean Accident and Guarantee Corporation.

### Canonbury Tower.

LONDON, N.—W.D. writes: "I should be glad to know when Canonbury Tower (which is situated on one side of Canonbury Square, N., near Highbury Station, on the North London railway) was built?"

Canonbury Tower is a red brick structure of Elizabethan date. There is no evidence as to its precise age. It is about 17ft. square and nearly 60ft. in height. It was probably erected by Sir John Spencer, Knt. (Lord Mayor of London in 1594), as an adjunct to his suburban seat, but it was afterwards let out as lodgings. Newbury the bookseller was a tenant, and here Ephraim Chambers compiled his encyclopædia and Goldsmith wrote "The Vicar of Wakefield" whilst hiding from his creditors. The site was at one time in possession of the Prior and Canons of St. Bartholomew's, Smithfield; hence the derivation of Canonbury—the Canons' dwelling. The rebus of the last prior (Bolton) was visible upon a wall in the vicinity some years ago.

### A Boundary Line Agreement.

LONG EATON.—LEX writes: "I am about to arrange a 'give-and-take' line about 60ft. long between two adjoining owners, so as to make the division more at right angles with the street than at present. I assume it will be sufficient if I prepare an agreement with a plan on it, provided both parties sign. The amounts to be exchanged are agreed to be equal in all respects."

Yes, provided the agreement is stamped at Somerset House.

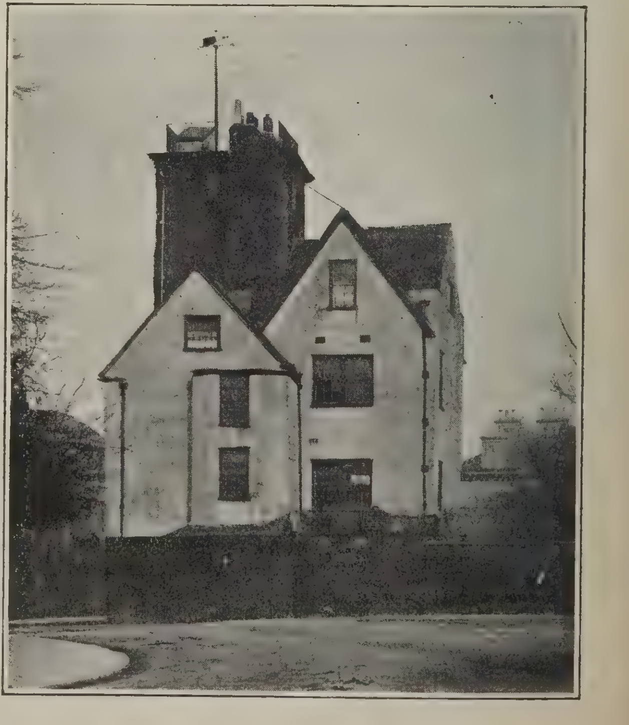
### Surveyors' Institution Examination.

WIMBLEDON.—H. B. H. writes: "Which are the best books (not too expensive) to study for the Associate examination of the Surveyors' Institution, building division? With a fair knowledge of construction and quantities, would my chances of passing be as good if I worked up the other subjects without the aid of a coach?"

"Specification No. 6" (price 5s. nett, from these offices), Hunter's "Self-Instruction in Bookkeeping" (Longmans & Co., 2s.), Hull's "Ornamental and Building Stones" (Macmillan, 12s.), "Concrete, its nature and uses," by George L. Sutcliffe (Crosby Lockwood, 7s. 6d.), Rivington's "Notes on Building Construction" (4 vols., Longmans, 49s.), Baker's "Land and Engineering Surveying" (Crosby Lockwood, 2s.), "Trigonometry," by Prof. Henry Adams (Whittaker, 2s. 6d.), Baker's "Mensuration and Measuring" (Crosby Lockwood, 1s. 6d.), Tarn's "Measuring and Valuing Artificers' Work" (Crosby Lockwood, 7s. 6d.), Davis's "Quantities" (J. Morgan, Catherine Street, W.C., 3s. 6d.), Macer's "Dilapidations" (Estates Gazette, 5s.), Wright's "Fixtures" (Estates Gazette, 5s.), Hudson's "Light and Air" (Estates Gazette, 6s.). You ought to be able to work up the subjects without the aid of a coach, though personal instruction saves so much time and is more thorough.

### Books on Architecture and Ornament.

MIDDLESBROUGH.—A. B. M. writes: "Which are the best elementary books on the following:—Principles of ornament, architecture, drawing from the antique, architectural design, painting ornament, painting still life, drawing from the life and design?"



CANONBURY TOWER LONDON, N.

Wood's "Principles of Ornament" (7s. 6d.); Fletcher's "History of Architecture" (21s.); "Specification No. 6" (5s. 9d.); Ruskin's "Elements of Drawing" (5s.). These books can be obtained from the Publisher, 6, New Street, E.C., at the prices named, post free.

### A Special Hinge.

DUKINFIELD.—J. H. L. writes: "Could you give an elevation of the hinge marked *h*, Fig. 182, in the chapter on shutters in Vol. 2 of Rivington's 'Building Construction'? I have searched several makers' catalogues, but cannot see a hinge of this description."

We do not know of anyone regularly supplying this hinge. It will have to be specially made, and you can design the elevation as you think best.

## Views and Reviews.

### Examinations and Appointments in the Building Trades.

This little book of thirty-six pages gives a most useful summary of the examinations and appointments in the building trades. The examinations include those for builders' foremen, clerks of works and sanitary inspectors held by the Carpenters' Company, those in carpentry and joinery held throughout the kingdom under the auspices of the Department of Technology (late the City and Guilds of London Institute), the Board of Education examinations in building construction and the qualifications for fellowship of the British Institute of Certified Carpenters. In each case the subjects, requirements and other details of the examination are given. In a note on appointments the author suggests how to prepare for them, to obtain and retain them, and, under separate headings, proceeds to deal with the duties, qualifications and salaries of clerks of works, building foremen, shop foremen and building inspectors. At the end of the book Mr. Ellis (whose "Modern Practical Joinery" has taken its place as a standard work) gives particulars of the correspondence courses which he undertakes for the several examinations.

"The Candidate's Guide to Examinations and Appointments in the Building Trades," by George Ellis, 59, Woodlands Road, Ilford, Essex, price 6d. nett.

### Mitchell's Advanced Building Construction.

This fourth edition of Mitchell's "Building Construction: Advanced Course" is far superior to the third, which we severely criticised when it appeared two years ago. Our criticisms have been carefully attended to; numerous corrections have been made and few glaring errors appear, as in the previous edition; but, notwithstanding the large amount of revision, the general basis of the volume remains the same, and that basis is not what it should be. We do not mean by this that the book is not a very useful one; it is indisputably praiseworthy; but it is not a really scientific treatise; it is often involved and incoherent—in fact, it bears traces throughout of having been compiled as a guide-book to certain examinations. All the text-books on building construction suffer from the same fault. They should have been written to fit students for practical work and for life and not for the pedantic and academic schools.

The portion of this volume devoted to materials gives a number of facts, it is true, but there is no real proportion or system observed in the instruction. The principles should be elaborated and their bearing in all the phenomena described. We are glad to see the chemical formulæ and facts have been revised by a chemist, so so that they are innocuous if not instructive nor always correct. The whole treatment in this respect is so inadequate that it is amusing. The punctuation in many of the formulæ is still wrong. The chapters on graphic statics are perhaps the most important in the book, and yet they are very inadequate; all the difficult problems in the design of roof-trusses are shirked, and there are practically no explanations of the working-out of the illustrations that are given. New sections have been added on lightning conductors, electric bells and lighting. The first is so uninforming that it might well have been omitted. The information on electric bells and electric lighting is too elementary to be of much use; rules should be given for the proportioning of sizes of wiring, number of lights to sizes of rooms, number of batteries, the varieties of lamps and efficiency, &c. The chapter on foundations has been revised and enlarged, and is perhaps the best in the book. Many of the illustrations have been redrawn and others added; they are extremely full, and form one of the best features of the work.

"Building Construction: Advanced Course" by Charles F. Mitchell and George A. Mitchell. Fourth edition, price 5s. 6d. London: B. T. Batsford, 94, High Holborn, W.C.

### South Africa for Business Men.

The great merit of this book is that the author knows what he is talking about and is able to make his facts clear. As the special commissioner who was sent out by the "Engineer" after the war, he writes specially from an engineer's standpoint; but in doing so he deals inevitably with many questions which are of equal importance to the architect and the builder, and, particularly, to building trade firms; so that any of these last who contemplate business in South Africa will find many of the chapters most useful to them.

The first part of the book deals with matters which have become somewhat controversial, though the author establishes his contentions in a well-reasoned manner; the latter chapters deal with the railway and mining interests, which do not concern us.

The author emphasizes that in the future the coast towns, such as Cape Town, Port Elizabeth and Durban, will become the doors, so to speak, of the up-country towns, around which the greatest development will take place; such as Johannesburg and Kimberley. Cape Town has already lost its supremacy as a commercial centre, not because its trade is decreasing—on the contrary it is increasing—but because other places are making more rapid headway.

Two problems are very prominent in South Africa—the problem of living and the labour problem. With regard to the former, the author puts the average hotel expenses of an ordinary commercial engineer at £2 a day in the towns; to which he adds 10s. a day club expenses, 5s. a day for cabs ("the business man must at times use cabs"—and in Johannesburg the charge is 10s. an hour), and the cost of a licence to enable him to practice, which is £25 for Cape Colony and £20 for the Transvaal. It will of course be much cheaper to board with a family, but even this will cost from £25 to £30 a month, without clubs and recreations; while in Johannesburg or Pretoria it will cost £20 more, and £30 more in Buluwayo. Earnings must of course be proportionately high. In the building trade, for example, an ordinary workman will earn at least £3 a week in Cape Town, though this will not go so far as 35s. in London. In Rhodesia masons earn 32s. 6d. a day, bricklayers 30s., and carpenters and painters 25s.

The author devotes a chapter to the labour problem. He observes that the capacity of the blacks for unskilled work has been proved, and it has been made equally apparent that without their labour South Africa can have no industrial future. At the same time experience has shown that the African negro cannot be employed satisfactorily in large numbers unless he is subjected to a certain control, however much this may be resented by the faddist who persists in maintaining the "man and brother" theory that there is no difference between white and black, and that consequently the one should be treated in every way as equal to the other.

Mr. Ransome remarks that we are wont, in England, to overdo things. "We overdo teetotalism and anti-vaccination, and ping-pong, as we overdid Mafeking and the Boer generals." Certainly there are some good people who overdo worrying the British manufacturer, who, we are told, is not looking after his interests in South Africa and that his place is being usurped by the foreigner; yet the latest figures show that Great Britain and her colonies are furnishing 76 per cent. of the goods. Similarly, irresponsible critics have asserted that the mining machinery on the Rand is out of date; whereas it is more complete and modern than anywhere else in the world.

"The Engineer in South Africa," by Stafford Ransome, M.I.C.E. London: Constable & Co., Ltd., 2, Whitehall Gardens, S.W., price 7s. 6d. nett.

## TINTERN ABBEY.

### What the Crown Officials are Doing.

THE ivy at Tintern Abbey has, as in other ruins, been growing dangerously strong; so that the Crown authorities have found it necessary to remove certain portions. At the sacristy arch leading into the cloister garth a trunk of ivy, with its roots deeply embedded in the wall, had grown to a big stem, pushing its way through the masonry, though making no outside show of leaf until it got over the top of the arch, about 10ft. from the ground. The masonry was so split that there was imminent danger of it falling down. The place was therefore carefully shored up, the ivy removed, and a new arch erected in the original position.

But ivy is not the only growth which has threatened the ruin. The hazel, and even the elder, have in some cases struck their roots into the walls. They are being properly dealt with.

The four lofty east windows are receiving attention, the vegetable growth being removed.

On the left side of the main arch as one walks from the nave to the chancel there is an overhanging pile of stonework, probably weighing 20 tons, which for a long time has rested practically on nothing. This will be buttressed and made secure. There are, however, certain parts which cannot be preserved, such as thirteenth-century detached shafts in the sides of the windows which are in some cases split from top to bottom, while others are gone altogether.

Some dwelling-houses have been taken down, and others will soon follow, to give a more uninterrupted view of the abbey from almost all sides, and to seek out the precincts of the building. One modern cottage with a garden plot which had raised the level of the ground more than a foot above some of the ancient masonry has been dealt with, with the result that a good deal of interesting work has been brought to light. Notably what seems to be an arched waterway outside the kitchen and refectory, with, possibly, an inlet or outlet to the Anjiddy Brook, provokes suggestion and explanation. Was it part of an ancient drainage system, a piscatorium (where fish were preserved alive for the Friday meals), or the reservoir for the domestic water-supply and bath? With the demolition of other cottages the opening-up of the infirmary and cellarages will be undertaken.

The work of repair is under the direction of Mr. F. W. Waller, of Gloucester, one of the Crown architects, and Mr. John Roberts, the Crown keeper.

## FOREIGN CEMENT.

### Why Belgian Prices are Low.

AT the annual general meeting of the Associated Portland Cement Manufacturers (1900), Ltd., held last week in London, the chairman, Mr. F. A. White, referred to the competition in this country caused by foreign cement imports. Mr. White said:—

Some of you are inclined to wonder why it is that we, with chalk and clay at our doors, with our works situated on the greatest waterway of the country that was once almost the only workshop of the world, find ourselves hindered by the competition of Germany and Belgium, not only in the distant markets that are fed by shipping from Antwerp and Hamburg, but also round our own coasts. Why should the Continent be able to do what we cannot?

In the first place, I must tell you that Belgium, rather than Germany, is now the largest invader of our home trade. Secondly, that they use the weapon of natural cement (which we do not make) more largely than that of artificial cement, the manufacture of which is similar to our own; that is to say, cement made from material in which Nature has united all the component parts in proportions more or less accurate (generally less), rather than cement composed of those materials brought together for artificial mixing in the exact proportions desired. Such natural cement is more cheaply made, and, even though its quality be variable, and its behaviour in the work for which it is destined uncertain, a class of buyers exists willing to take its chance as to results provided the first cost be low.

Further than this, the natural cement and the artificial are alike made in conditions of the labour market with which our own cannot compare. I was recently visiting some works in Belgium where I was told that 2½d. per hour was the cost of their unskilled labour—a figure which is manifestly impossible in this country, where the corresponding wages are properly more like double. Moreover, the State railways in these countries offer facilities of transport from inland works to the exporting ports that practically constitute a bounty.

### "Portland Cement."

Referring to the recent prosecution of the company for having sold as Portland cement something that was not Portland cement, Mr. White explained that a certain class of cement was made by the company with the introduction of certain ingredients not hitherto employed which produced a marked and beneficial addition to the setting time of the cement and to the tensile strain it would bear both when used alone and when mixed with sand. This it was contended was not Portland cement. When the present company acquired the businesses, there was a large and growing connection which bought this class of cement, which had answered well in use, and there was no reason why the company should not continue to manufacture it. They had never sold it without the customer knowing what he bought, and they never would. But it was slightly cheaper to manufacture—not nearly so much, however, as some people asserted—than the other brands, and they maintained that with His Majesty's Customs absolutely declining, as they did, to place an interdict on the foreign natural cements which came here branded as Portland cement, it was unnecessary, nay, absurd, for them to refuse the sale of it to those who wished it. The legal proceedings were abortive, because it was decided that the magistrates before whom the plaintiff's case was heard had no jurisdiction, and it seemed inadvisable to defend the company there. But that did not mean that they were not prepared to maintain and amplify in the proper court the views that he had put forward.

## Bricks and Mortar.

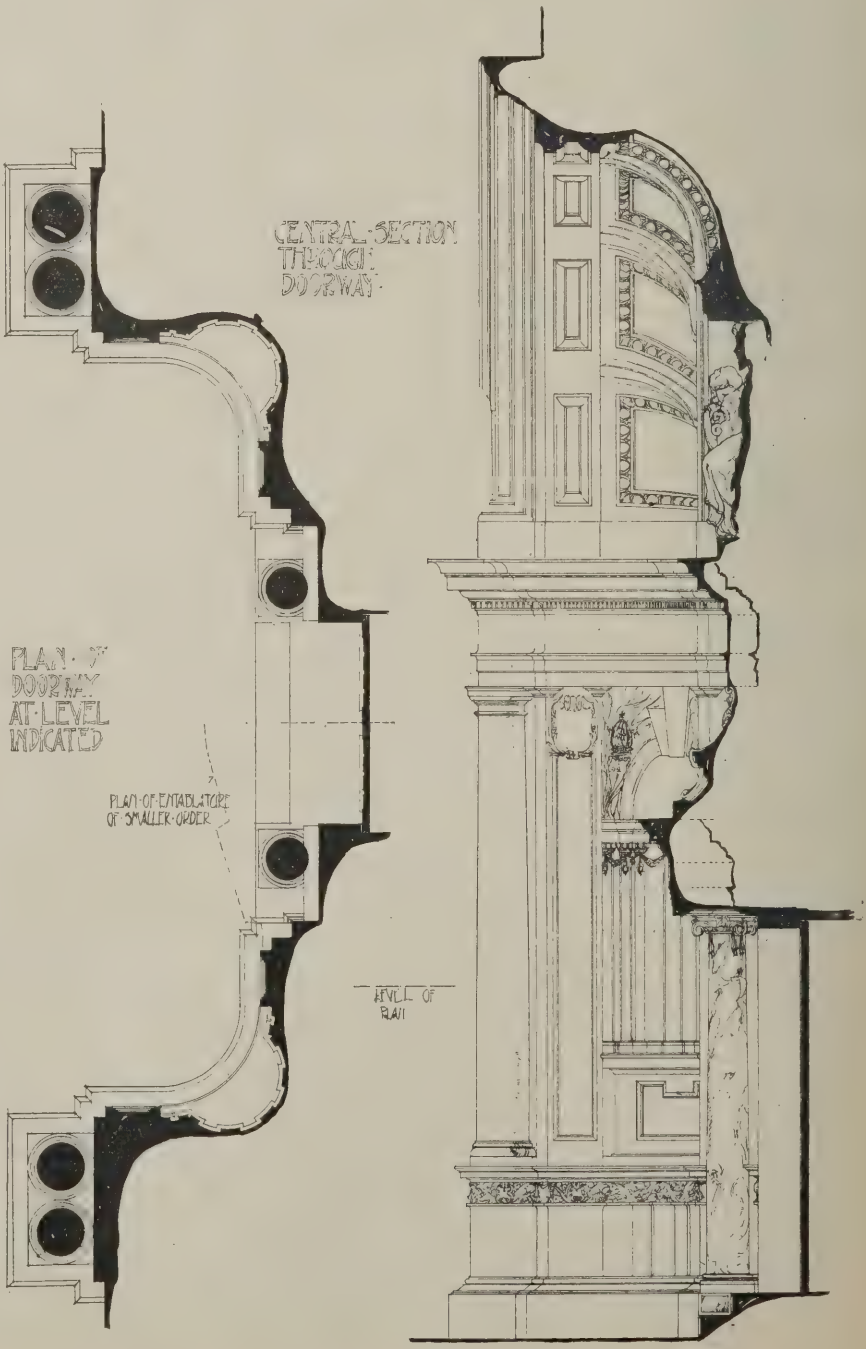
**Aphorism for the Week.**

*He who copies is bound by the letter of the original. He who imitates is bound only by the spirit and essence of the type: but true originality does not consist merely in variation.*

DONALDSON.

**Our Plates.** THE new bank for the York City and County Banking Co. at Middlesbrough is now being erected to replace their old premises. The building up to the first-floor window sills is of granite, the plinth, ground-floor window sills and sur-base between of Rubislaw grey granite, and the remainder of Peterhead red granite. The building is faced above with Dunhouse stone, and the dome is of copper. The pediments and other portions of the front are to be carved. Besides the banking premises the building contains suites of offices. The architect is Mr. Harry Barnes, A.R.I.B.A., of Bank Chambers, West Hartlepool.—The panelling in the billiard-room at Burnholme, York (Mr. Arthur J. Penty, architect), is executed in oak, wax polished, the panels in the overmantel being in ebony. The carving is by Mr. G. W. Milburn, of York.—Some particulars of the design for a cathedral doorway by Mr. Alfred C. Bossom are given on the drawings themselves.

**Spanish-Colonial Architecture in Mexico.** A SERIES of ten quarto volumes on this subject, by Mr. Sylvester Baxter, with photographic plates by Mr. Henry Greenwood Peabody and plans by Mr. Bertram Grosvenor Goodhue, is about to be issued by Messrs. T. C. & E. C. Jack, of London and Edinburgh, price £21 nett. Beginning with the Conquest of Mexico by Cortés, the history of Spanish-Colonial architecture in that country covers a period of nearly four centuries. Fostered by Church and State, it represents an epoch of vast wealth and high artistic cultivation. It employed in its service much of the foremost talent of the mother-country—architects, sculptors and painters—and promoted in Spain's foremost New World possession the development of an extraordinary amount of native talent in the fine arts, together with great constructive skill. Thus it filled the land with splendid works of a monumental character.


CENTRAL-SECTION THROUGH DOORWAY
PLAN OF DOORWAY AT LEVEL INDICATED
PLAN-OF-ENTABLATURE OF-SMALLER-ORDER
LEVEL OF PLAN

DESIGN FOR A CATHEDRAL DOORWAY, BY ALFRED C. BOSSOM.

# Builders' Notes.

**The National Association of Master House Painters and Decorators** decided last week to establish a school of painting at Manchester.

**The General Hospital, Cheltenham,** has been supplied by Messrs. E. H. Shorland & Brother, of Manchester, with their double-fronted patent Manchester stoves with descending smoke flues.

**Penrhyn Quarry Dispute**—The Federation of Trade Unions has withdrawn its financial support (amounting to £3,000 per year) to the strikers at Penrhyn Slate Quarries, and it now seems probable that the strike will collapse.

**The Crisis in the New York Building Trade** has reached an extreme stage, and between fifty million and sixty million dollars intended for investment in New York buildings have been withdrawn owing to the ceaseless strikes.

**The Works Department's Foreign Contracts.**—During the year ending March 31st last the English Works Department obtained from abroad mosaic paving value £870; Eubœolith paving £183; boilers and radiators £2,127; and wood-block flooring £7,259.

**Employment in the Building Trades** during August continued moderate with little change as compared with a month ago and a year ago. The percentage of unemployed trade-union members among carpenters and joiners was 2·9 and that for plumbers 7·1 at the end of August.

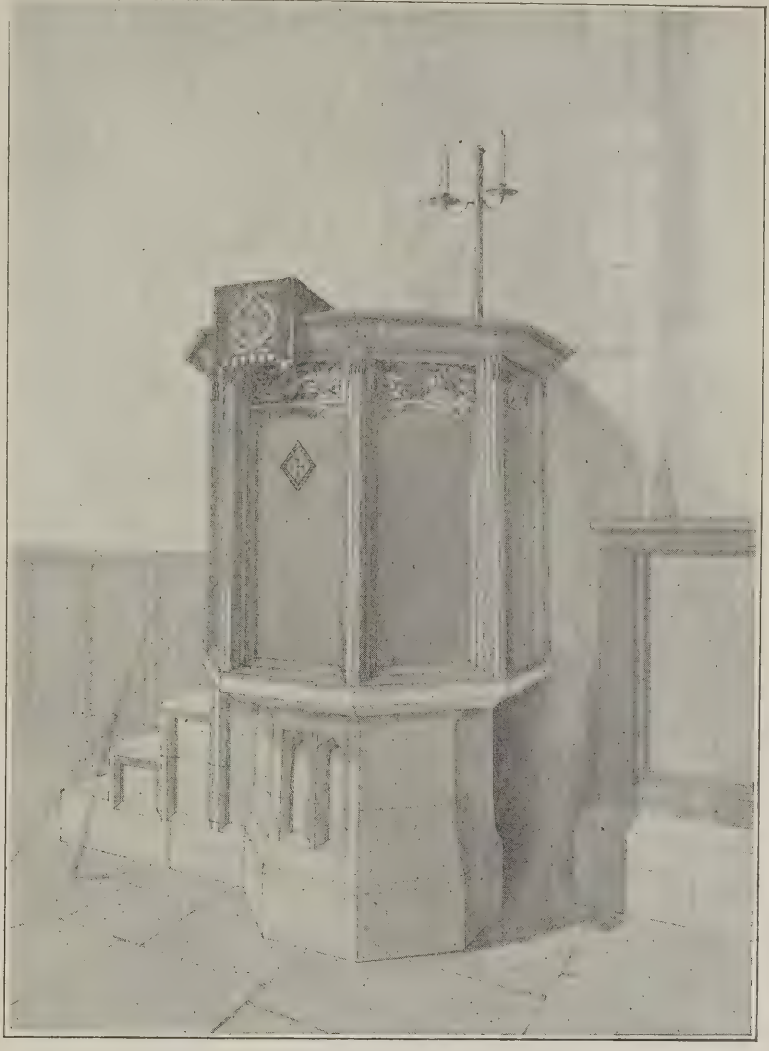
**Accident at the Savoy Hotel.**—A fatal accident occurred last week at the rebuilding operations which are in progress on the Strand approach to the Savoy Hotel. A derrick, worked by hand, employed in lifting an iron girder, collapsed, killing one man and injuring two others.

**Prices of Cut Nails.**—At a quarterly meeting of the Cut-Nail Makers' Association held last week it was decided that, having regard to the low prices at which wire nails are being imported, it would not be advisable to recommend any advance in the prices of cut nails.

**Sanitary Inspectors' Examination.**—The next examination for certificates of qualification for the appointment of sanitary inspector, or inspector of nuisances, will be held in London on January 19th, 1904, and the four following days. Particulars will be forwarded on application to the hon. secretary of the Sanitary Inspectors' Examination Board, Mr. R. E. Coles, 1, Adelaide Buildings, London Bridge.

**Sunderland Joiners.**—On June 18th about 350 house joiners at Sunderland struck work for an advance of wages. The Board of Trade, in response to a joint application from masters and men for the appointment of an arbitrator, nominated Mr. A. A. Hudson, barrister-at-law. They have now to return to work on the old rate of pay in accordance with his award. The men came out demanding an advance from 9½d. to 10d., while the masters issued notices for a reduction to 9d.

**British Honduras Mahogany and Cedar.**—A report on British Honduras recently issued by the Colonial Office states that the most important feature of the lumber trade of the year has been the increase of exports to the United States of mahogany and cedar. In 1902, 2,226,337ft. of mahogany and 271,341ft. of cedar were shipped to that market, as against 364,724ft. and 131,643ft. in 1901. The trade with England has greatly fallen off, having decreased from 5,390,871ft. in 1901 to 3,547,120ft. in 1902.



PULPIT, BATLEY CARR, YORKS. A. H. SKIPWORTH, ARCHITECT.

**Fanlight Openers.**—Mr. Robert Adams, of 65 and 67, Newington Causeway, S.E., has produced some new patterns of his well-known screwed rod and regulator fanlight opener especially suitable for hospitals and asylums, and has introduced some further improvements in the manufacture of gearing and fanlight openers. This rod and regulator system, which is now adopted by all architects, is the invention of Mr. Adams himself, who was for many years the sole maker. Mr. Adams is also about to bring out a new pneumatic spring hinge embodying a number of important improvements.

## VENTILATING TUBE RAILWAYS.

Mr. J. W. THOMAS read a paper on the ventilation of tube railways before the recent meeting of the British Association. It was calculated that the forces brought into play by the moving trains and the natural heat of the tubes would be ample if properly directed. In tube railways, if B were the centre of three stations, the down train moving from A to B would draw air from the A station into the tube and expel it in the B station, and the up train moving from C to B would draw air from the C station into the tube and expel it in the B station. Three stations were thus directly involved, and a triple-station arrangement would best fulfil the physical conditions. Owing to the elasticity of air the outlets for expelling the vitiated atmosphere must not be situated far from the points of greatest compression, and should begin in the centre of each station underground and end in the open air above the station at the surface. For the same reason the intakes for fresh air should be close to the points where the sudden expansion of the air began. These points were at the ends of the tubes which the moving trains entered. Doors could be fixed at the ends of the two tubes which the trains entered in each station, and closed behind the last trains at night, so that the fresh air brought into the end of the tube immediately beyond the doors would drive out the foul air into the next station by natural ventilating pressure. By closing the doors after some of the trains as they left the stations, fresh air would be drawn into the tubes.

In the course of a brief discussion on this paper Mr. G. J. Morrison pointed out that it was useless to trust to difference in temperature between the air in a tube and on the surface to secure ventilation. The station should be used as a downcast, and upcast shafts should be constructed between stations. The circulation of air could be secured by a fan or by heating the air artificially.

**The Pulpit at Batley Carr, Yorks,** illustrated above (from a drawing exhibited at this year's Academy) was executed in oak, stained by fumigation, with a stone base and steps. The background of the carving was stained green, and in the central panel a small piece of inlay was inserted. The work was carried out by Mr. L. A. Turners, and the candle standard in bright iron by Mr. Bainbridge Reynolds. Mr. A. H. Skipworth, of 5, Staple Inn, was the architect.

# BUILDERS' OFFICE WORK.—I.

By W. H C. E.

IN undertaking this short series of articles the writer is not concerned with suggestions as to the arrangement or conduct of the clerical establishments of large engineering or contracting firms. In such, time will have operated towards bringing into existence such a system of office arrangements as will have been found best suited to the particular needs of the particular firm, and however good in theory the suggestions of an outsider might be, practice, the ascertained knowledge gained by special adaptations to special needs, might engender a tendency to rank such suggestions as bordering on impertinence. It is rather for the guidance of smaller establishments, for clerical assistants with limited knowledge, that these articles are written, and whilst exigencies of space prevent anything like an exhaustive handling of the subject, it is hoped that what is given will be found both readable and instructive.

"Order is Heaven's first law," and method and system are its twin handmaids; but, whilst in no other trade or calling is there such a vast opportunity for confusion as exists in that conglomeration of trades comprised in the general term "builder," it must be confessed that, broadly speaking, builders seem rather to embrace the opportunity than to eschew it, especially so far as "indoor" arrangements are concerned. Given equal abilities, and facilities for the full development of those abilities, the man of order and method will find his reward in the shape of an honoured and successful career; while the man without method will find his ignominious level midst the odour of sanctity which hovers around the bankruptcy court, whither many a man has found his way because he would not or could not undertake the necessary office work, or failed to appreciate its bearing upon his outside operations.

The builder who lacks office training, and there are many, is very apt, no matter how perfect and systematic his outdoor arrangements may be, to severely neglect the indoor work or to relegate it to a very subordinate position, with the result that his office is in a perpetual tumult of confusion, time-wasting and temper-spoiling. It must be admitted, and the admission is fathered by experience, that indoor work has very little attraction for a man whose chief occupation lies outside, so that it is wise to limit, as far as possible, the indoor work of the outside staff, and *vice versa*, always preserving a broad distinction between the two. As showing how the "outsider" regards the "slave of the desk" and all his works, it may not be out of place, by way of emphasizing the point, to remark that in a large establishment where the writer was at one time employed the outside staff were wont to refer to their indoor colleagues as "the non-producers."

The necessity for system will be apparent with but slight experience of the conduct of the office of any firm engaged in large undertakings. In order to cope with the work, everything must be sectionized, and the work of each section must proceed with almost clock-beat regularity, otherwise the routine of some other section, or of that of some unit of its own, will be interfered with, resulting in waste of time. With each member of the staff having his own allotted duties, which will vary little from day to day, matters can and should proceed smoothly; but where the staff is small the duties must necessarily be more varied, and it is consequently more difficult to ensure even running of the establishment. But it should ever be remembered that there is no time like the time present, and that it is far better to deal with extra work by an extra effort than to let it oust work belonging to the regular routine. When extra efforts tend to become chronic it is time to think about increasing the staff.

Offices are frequently understaffed, or staffed with cheap labour from mistaken motives of economy. In the first case work has to be done in the easiest possible way, to the detriment of accuracy and efficiency; in the second case the results are similar, though due to a different disturbing element. Many a builder in a fairly good way of business reduces his office expenditure under the mistaken notion that with close competition and cut prices he cannot afford to pay for skilled clerical assistance. Viewed squarely, such economy often proves to be of the back-handed order. An illustration: Some years ago a firm dissolved partnership. Thinking to economize, the dissolution expenses having been heavy, the partner retaining the old business engaged a clerk to take charge of the books at a weekly salary of a guinea. After the lapse of nine months expert assistance had to be called in to unravel the terrible tangle into which affairs had been allowed to get, and it took six months of hard work before the muddle was set in order. The writer was one of the actors in this little drama-cum-tragedy, and remembers it vividly. A good builders' clerk ought to be worth more than the average commercial clerk, yet builders' clerks are, as a body, very poorly paid and generally work long hours for their money.

One of the most important items in office work, though it is always relegated to a junior, is the final dealing with correspondence, both inward and outward. Letters inward have a nasty habit of accumulating on the private-office table, where they get mixed up with invoices, statements, quotations, price lists, memoranda and what not. A letter is wanted and is hurriedly searched for, and in the process gets pushed further still out of sight. This arises from lack of system, and when the Augean cleansing task is undertaken it gives rise for the time being to another evil: the correspondence gets transferred from table to file, and the accumulation is such that either the routine work of the day is upset in order to deal with it or, which is more likely, it is left until a favourable opportunity occurs. Things work much more smoothly if letters are dealt with as received.

Many builders make no pretence of doing anything with letters, invoices or receipts other than threading them on a length of wire designated a "file"; some go a step beyond and arrange them alphabetically in the pockets of a book file built concertina-wise. Each is a time-wasting makeshift where reference is often required. In the former case many documents have to be scanned before the one sought for is secured; in the latter the facility with which papers *will* get into the wrong pockets gives rise to exasperation. Failing any better method, letters and receipts should each be folded to a somewhat uniform size, endorsed with source of origin and date, and then arranged alphabetically in some convenient receptacle. Pigeon-holes are very generally employed, and where references are fairly frequent it is customary to employ two sets so that documents of the previous year are also handy for ready reference. But these pigeon-holes are grand receptacles for dust unless they can be enclosed, and, further, they afford scope for some trouble arising out of careless sorting or replacement. Another method, and one which is very convenient, is that of docketing. Dockets may be made for each letter of the alphabet, or, according to the bulk of the correspondence, letters from A to M and from N to Z may be grouped together, or any other sort of division or grouping can be made to suit requirements. With dockets, more so than with pigeon-holes, it is important that the document should be folded to one width and to a maximum length, as an aid to which a template of sheet zinc is useful; and as the papers are docketed they should be arranged alphabetically, not only according to the initial letter but also by the second and other letters, as in a printed index; letters from firms should also be grouped. Arranged thus, the maximum of facility in referring to documents of any sort is secured. Each docket should be fronted and backed with a piece of thin wood – say oak about $\frac{3}{16}$in. thick (stout cardboard, with a calico hinge, will serve as a substitute) – about 8in. long by $2\frac{1}{2}$in. wide, a 2in. piece being cut from the head of each front and secured with a slip of stout basil leather glued on to form a hinge. A couple of stout rubber bands, or lengths of red tape, complete the arrangement after a label has been stuck to the hinge piece to serve as an indication of the contents of the packet.

Before leaving the subject of docketing and pigeon-holeing mention must be made of the plan of adding to the name and date endorsed thereon a précis or brief synopsis of the contents of the letter. Précis writing is in itself an art, and it is not everyone who is naturally fitted to indicate in a few words the salient features of a document that may run to some length, but it is an art well worth cultivating and its adoption to letter endorsements can be advocated.

Another system of dealing with letters received which has good points is that of binding them up promiscuously as received by means of Matthews' Mechanical Letter Binder. Indexing has then to be done as with an ordinary letter-copying book. The disadvantage of this system is, that should it become necessary to remove a letter from its binding (a certain and ever-recurring contingency) it cannot be replaced. This reservation does not apply to the "Shannon" filing system. In this each paper to be filed is perforated with a couple of holes by an appliance attached to the filing board, and these holes correspond with a couple of arch-shaped clips at the head of the board. Each file is provided with an index in loose sheets and each document is filed alphabetically and in any pre-determined order of relationship to those previously filed, making reference easy and doing away with the necessity of a written index. Whilst on the file any document can be readily removed and as readily replaced, and when the file is full the mass of papers can be transferred bodily to a binding case.

But it is not always possible to deal with every letter or other document at once. To meet such cases small nests of drawers are obtainable at a very cheap rate of any stationer, or book files for the temporary accommodation of papers of all descriptions can be obtained cheaply, and are extremely useful for temporarily and cleanly preserving invoices, statements, quotations, orders or any other document which cannot be immediately dealt with; the initial cost would soon be covered by the time saved owing to the ready reference afforded, provided that they are used systematically on the principle of "a place for everything and everything in its place"; without this proviso the best of mechanical helps will fail to be of much service.

"Letters inwards" leads by an easy stage to "letters outwards," and it might be thought superfluous to refer to such a universally used article as a letter-copying book. But it is a fact, though strange, that even yet business men may be found who find no use for it; a still larger number use it only for what they may term important letters. One never knows what is going to happen; hence a letter to which no special importance was attached at the time of writing

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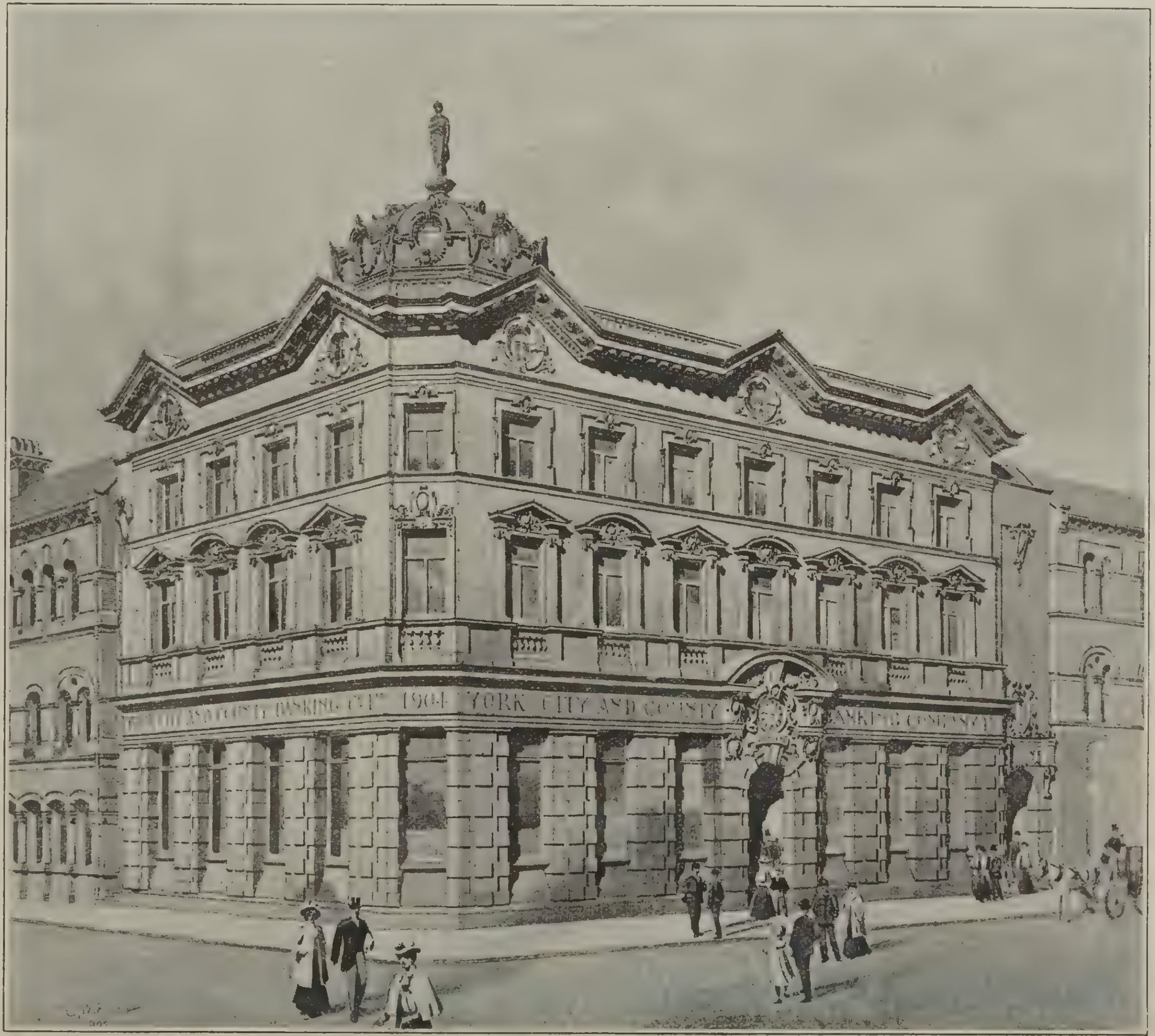
1904
YORK CITY AND COUNTY BANKING COMPANY

NEW BANK, MIDDLESBROUGH.    HARRY BARNES, A.R.I.B.A., ARCHITECT.

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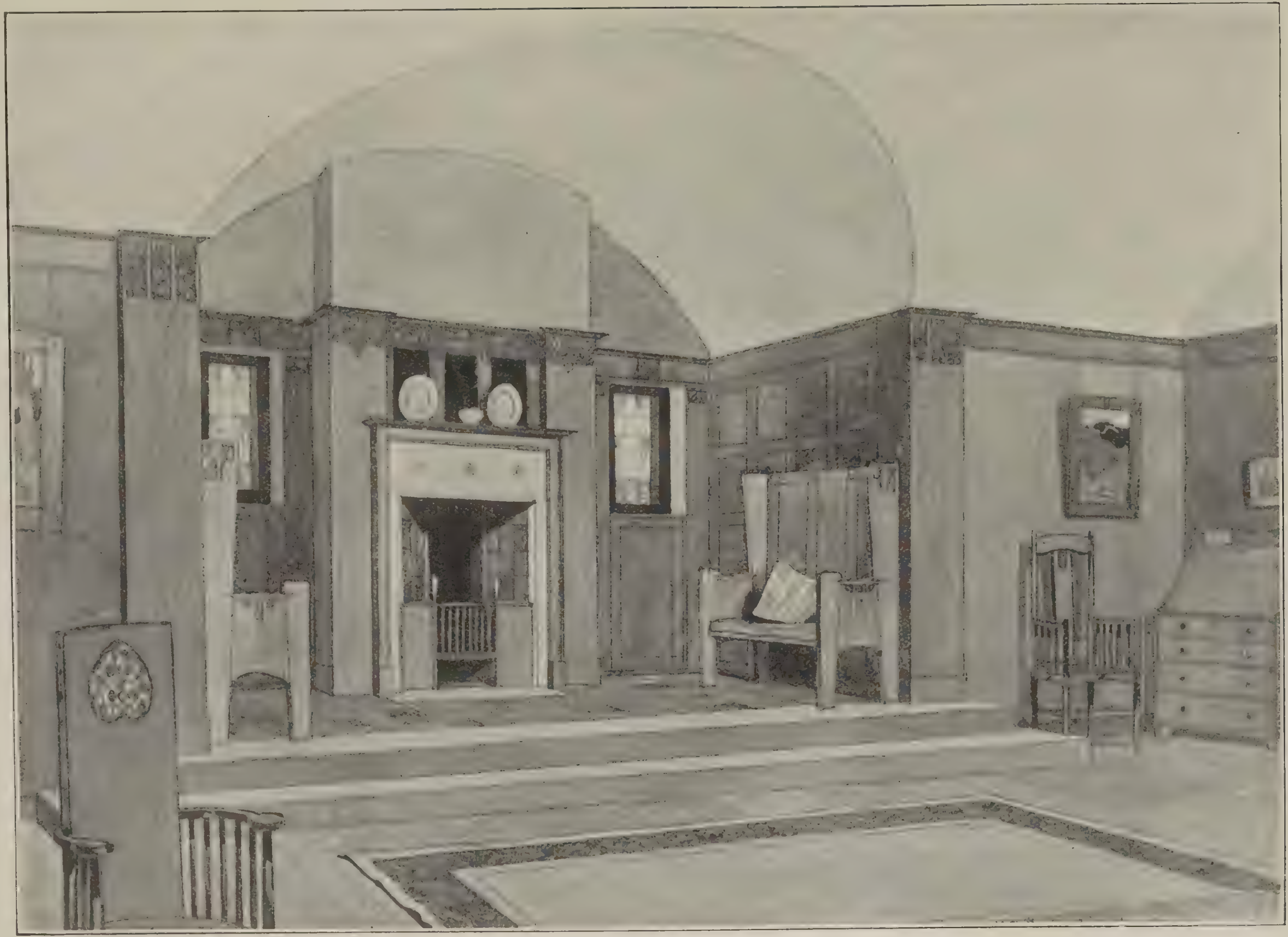

Billiard-Room, Burnholme, York. Arthur J. Penty, Architect.

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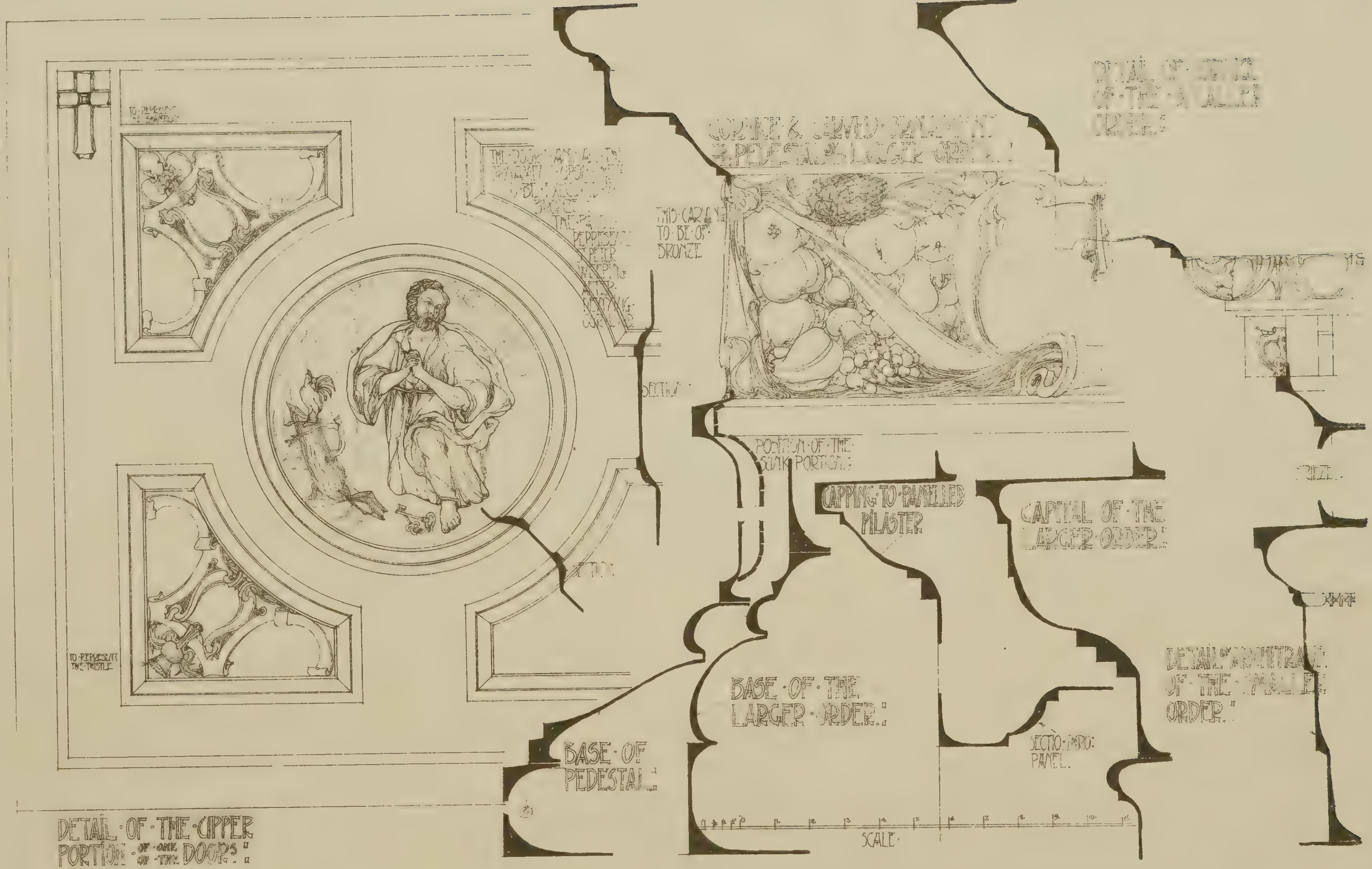
CORNICE & CARVED PANEL OF PEDESTAL OF LARGER ORDER
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SECTION
POSITION OF THE SUNK PORTION
CAPPING TO PANELLED PILASTER
CAPITAL OF THE LARGER ORDER
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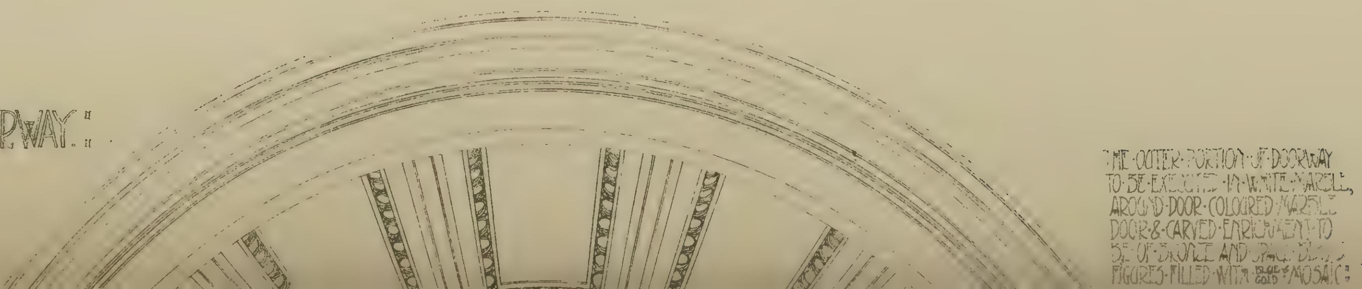
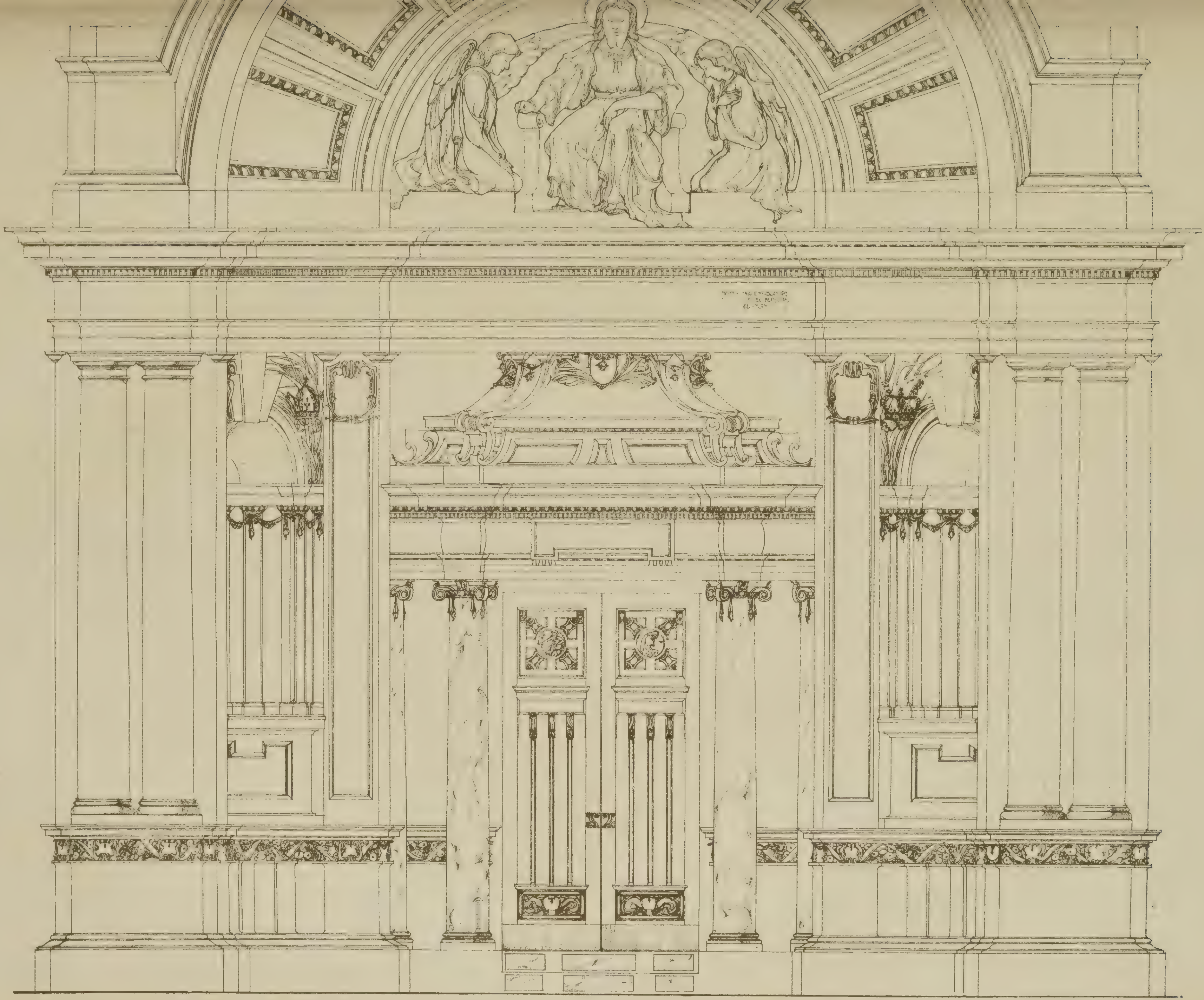
DETAIL OF ARCHITRAVE OF THE SMALLER ORDER
BASE OF THE LARGER ORDER
SECTION THRO' PANEL
BASE OF PEDESTAL
SCALE

DETAIL OF THE UPPER PORTION OF ONE OF THE DOORS

DESIGN FOR A CATHEDRAL DOORWAY
ELEVATION



THE OUTER PORTION OF DOORWAY TO BE EXECUTED IN WHITE MARBLE, AROUND DOOR COLOURED MARBLE, DOOR & CARVED ENRICHMENT TO BE OF BRONZE AND SPACE BETWEEN FIGURES FILLED WITH BLUE & GOLD MOSAIC.



"INK-PHOTO." R J EVERETT & SONS, 58 LUDGATE HILL, LONDON

BY ALFRED C. BOSSOM.

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may become of vital importance later. Letter-copying books are now so cheap that there is no excuse for letting a single letter or post-card pass from one's hands without being copied. And this applies equally to private letters written from home as to the business letters written at the office. No press at home? Stand on the book for a second or two and you will get a clear impression. No copying ink handy? A little sugar or, better still, a drop or two of honey added to ordinary ink makes it copyable and practically as good as the ordinary commercial article. If price is not a serious consideration the copying books having leaves of buff paper are far preferable to those of white tissue. A hint that may be of use when several copies are required is to take one, perhaps two, copies from the back of the first copy; the bulk of the ink being always removed from the face of the original at the first pressing.

The letters copied should be promptly indexed. In some offices it is made the rule that whoever copies a letter should index it at once; but the best of rules is sure to be broken at some time, and it is far preferable to allot the indexing to one of the juniors whose duty it should be daily to index the previous day's correspondence. And in order to ensure that no letter gets missed, some plan of indicating how far the indexing has proceeded must be provided. One very generally adopted is to place the number of the last page dealt with on the inside of the cover; what is, perhaps, a better plan is the scoring of each page *after* it has been duly indexed with a coloured pencil. This has the advantage of at once drawing attention to any page which should happen to get missed, and decreases the chance of missing any, but it must be made a strict rule not to do the scoring until the indexing is actually accomplished. It is a help, too, if above the figures indicating the page where a letter to a particular firm or individual can be found a word can be added, such as "estimate," "drains," "roof," to facilitate the ready finding of a letter upon some particular topic. The only objection that can be urged against this practice (and it falls with equal weight against précis writing) is that it affords the office boy—to whose lot such work generally falls—an excuse for thoroughly digesting the contents of every letter written or received. But for every advantage there is a corresponding disadvantage, and the one must be weighed against the other in deciding upon any course of procedure.

In manuscript indexing it is not possible to adopt a strict alphabetical arrangement, except as regards the initial letter, but a plan that facilitates reference is to make five divisions to each letter of the alphabet corresponding to the five vowels. Thus in indexing "Jones" the name would go in the "J*o*" group. "Smithson" (S, and the first vowel) in the "S*i*" group, "Chrysostom" in the "C*o*" group, and so on. Sometimes it is necessary to make a "y" group to accommodate such names as "Urry"; and in dealing with such names as "McBride" the names should go in the "a" group, as with "Macdonald."

There is still another point in connection with indexing which aids rapid reference, and that is the system of cross-referencing each letter to the previous and subsequent letter to the same person or firm. Thus, in commencing a new book the first letter to Brown would be simply indexed to p. 7. On indexing a second communication on p. 10 to him the clerk would, on p. 10, put n the top right-hand corner in coloured pencil the reference to the previous letter, thus, (7). A more complete form gives reference forward as well as backward; hus, on indexing p. 10 the back reference would be added above a line $\underline{7}$ and the letter on p. 7 would have a forward reference below a line $\overline{10}$; then, on indexing a third letter to Brown on p. 25, the back reference to p. 10 would be added above a line $\underline{10}$, and the forward reference on p. 10 would be completed by adding 25 to the vacant space below the line, thus: $\frac{7}{25}$. Though it makes the referencing more complete, it is somewhat doubtful if it is worth the time involved, seeing that the forward reference necessitates the turning up of a page not being dealt with.

The actual correspondence will not, as a general rule, trouble the ordinary clerical staff greatly. In large offices a special correspondence clerk will be employed; in smaller establishments the head will probably attend to the bulk of it himself. Strange though it may seem, in these days of advanced education it is a comparatively rare accomplishment for young men of the clerical grade to be able to compose a terse yet sufficient reply to an enquiry, or an enquiry or application itself. The ability to do so is usually a natural gift, though deficiences may be made good to some extent by training. School or business-college courses are of slight use in this direction, and the best course is to get someone experienced to "edit" the learner's efforts.

Catalogues and price-lists introduce into a builder's office another great source of vexation of spirit, accentuated by their utter lack of uniformity in size, shape or arrangement. Catalogues issued in the form of well-bound volumes, though they may be diverse in size and shape, can usually find some sort of accommodation affording ready reference, but the mass of more or less relevant literature in the form of abridged lists, leaflets, booklets, folders and price-lists generally of small size get mixed on some shelf, or in some desk, drawer or box, where they are never to be found when wanted without a deal of trouble. It is very difficult to arrange any satisfactory plan of dealing with them, because even if each one is properly catalogued it often becomes necessary to search for some particular article without knowing in whose list it may be found, or the name of whose maker may have passed from the memory. But a plan the writer adopted many years ago proved satisfactory enough to warrant it being offered as workable even if it dces not entirely "fill the bill." A large flat-topped desk was used as a container and, as a preliminary, the lists were all sorted alphabetically in order to remove duplicates. This done, they were divided into groups, more or less arbitrary and more or less overlapping. Definite divisions into distinct groups are impossible, as will quickly be discovered by anyone following the plan, but an endeavour should be made to get the groups as numerically even as possible, and the divisions as few as convenient, on account of the unavoidable overlapping. About five will be found satisfactory, and they may be arranged somewhat as follows:—*Group* 1. Ironmongery, brass foundry, stoves and ranges, and metalwork generally. *Group* 2. Bricks, slates, tiles, sanitary appliances not included in group 1, chimney-pieces (except those of iron), lime, cement, &c. *Group* 3. Woodwork, glass, electrics, &c. *Group* 4. Oils, varnishes, colours, brushes, items of "plant," &c. *Group* 5. Anything not included in the other groups.

Each list then requires to be plainly marked with its group number or letter, as preferred, and, in addition, each must bear a successional numeral; but whether the numbering shall be consecutive through the whole batch, or duplicated for each group, depends upon circumstances. If *all* lists and catalogues are dealt with in the grouping plan, duplicated numbering will be preferable, inasmuch as a break in the sequence in any group will at once reveal the fact that some list is missing from its proper place; but if, as generally happens, those lists which aspire to the dignity of being classed as bound volumes are accorded an outside place of repose in a bookcase or some makeshift for such, then one numbering for the whole batch may be the preferable plan, each unit of each group still being kept in consecutive order, though there will necessarily be gaps in the numerical rotation. An index must of course be made, and this should show both group and rotation numbers, some special designation being applied to indicate lists which may be found on the bookshelf. It will thus be found easy by reference to the index to lay hands upon any desired list without loss of time, whilst if any particular article has to be searched for the grouping plan will certainly prove a great saving of time by obviating a search through the whole disordered pile. It must naturally be insisted on that every list when done with is restored to its proper place.

One thing systematically neglected by the small builder is the proper checking of invoices. Not only should each item be checked for quantity, but all calculations and extensions should be carefully scrutinized. Most invoices are now sent out "E. & O.E." (errors and omissions excepted). No one is infallible against mistakes, and invoices are frequently found wrong; but whilst most persons are quick enough to send back for correction an invoice in which the error is against them, few will be found ready to do so when the error is in their favour, salving their consciences with the plea that if the seller likes to charge by accident or otherwise a smaller total price for his wares than corresponds with market rate, it is his own affair. The morality of this plea cannot be justified, though a clerk might find himself in hot water if he returned an invoice or account in order to get its total increased.

Perhaps the most troublesome invoices are those dealing with timber. Hard and fancy woods are almost universally invoiced by superficial measurement reduced for purposes of calculation to a uniform thickness of 1 in. Thus a mahogany board 12ft. long, 15in. wide and 1½in. thick would be charged 22½ft. super. as inch. But ordinary building timber and pine are calculated upon the basis of the Petersburg "standard" which represents 120 12ft. lengths of 1½in. by 11in. stuff, equal to 165 cub. ft. A method of calculating the number of running feet of any sized scantling which will be the equivalent of a "standard" may be useful: Multiply 1440 (120 by 12) by 16·5 and divide the product by the sectional area of the particular scantling. Thus, a "standard" of 8in. by 2in. = 1,485ft. run; 8 by 2 = 16 and 1,440 by 16·5 ÷ 16 = 1,485. Thus—

$$\begin{array}{r@{}l} 1440 & \\ 16{\cdot}5 & \\ \hline 7200 & \\ 8640\phantom{0} & \\ 1440\phantom{00} & \\ \hline 16)23760{\cdot}0( & 1485 \\ 16\phantom{000{\cdot}0} & \\ \hline 77\phantom{00{\cdot}0} & \\ 64\phantom{00{\cdot}0} & \\ \hline 136\phantom{0{\cdot}0} & \\ 128\phantom{0{\cdot}0} & \\ \hline 80\phantom{{\cdot}0} & \\ 80\phantom{{\cdot}0} & \end{array}$$

The quantity of any size can thus be readily found, but it may be useful to give a table of a few of the sizes in most general use.

A Petersburg "standard" equals—

| | |
|---|---|
| 720ft. of | 11 × 3 |
| 1080 | 11 × 2 |
| 1440 | 11 × 1½ |
| 660 | 9 × 4 |
| 880 | 9 × 3 |
| 1320 | 9 × 2 |

| | |
|---|---|
| 1485 | 8 × 2 |
| $1357\frac{5}{7}$ | 7 × $2\frac{1}{2}$ |
| $1697\frac{1}{7}$ | 7 × 2 |
| 2160 | $5\frac{1}{2}$ × 2 |
| $1900\frac{4}{5}$ | 5 × $2\frac{1}{2}$ |
| 2376 | 5 × 2 |
| 2640 | $4\frac{1}{2}$ × 2 |
| 1980 | 4 × 3 |
| 2376 | 4 × $2\frac{1}{2}$ |
| 2970 | 4 × 2 |

The calculation quantity figures on a timber invoice will be expressed somewhat like this: 2 . 2 . 25 at £12 10s., which means that the charge is for 2 standards, 2 quarters (quarter standards) and 25 parts, a "part" being equal to one piece of $1\frac{1}{2}$ × 11 stuff 12ft. long; and as a standard contains 120 such pieces (parts) a "quarter" will equal 30 pieces. The invoice may not supply all the requisite figures for checking purposes, and recourse must be had to the delivery note, which may read:—

20 . 12
16 . 14
15 . 18
24 . 20

75 pces. 9 × 3 2nd yeo.

First calculate the running feet—

20 × 12 = 240
16 × 14 = 224
15 × 18 = 270
24 × 20 = 480

1214ft. of 9 × 3.

By reference to the table given it will be found that there are 880ft. of this section to a standard; hence this quantity will stand as the divisor, thus:—

880)1214(1 standard
880

334
4

Multiply the remainder by 4 to bring it to quarters.

1336(1 quarter
880

456
30

Multiply the remainder by 30 to bring it to parts.

13680(15 parts
880

4880
4400

480 $\frac{480}{880}=\frac{48}{88}=\frac{6}{11}$

The answer then is 1 std. 1 qr. $15\frac{6}{11}$ parts at (say) £10 5s. per standard:—

| | | £ | s. | d. |
|---|---|---|---|---|
| 1 standard at £10 5s. | = | 10 | 5 | 0 |
| 1 quarter ,, ,, | = | 2 | 11 | 3 |
| 15 parts at 1s. $8\frac{1}{2}$d. | = | 1 | 5 | $7\frac{1}{2}$ |
| $\frac{6}{11}$ ,, ,, | = | 0 | 0 | $11\frac{1}{2}$ |
| | = | £14 | 2 | 10 |

To arrive at the price per part, treat the pounds in the rate as pence, and multiply by 2; thus £10 5s. becomes $10\frac{1}{4}$d. × 2 = 1s. $8\frac{1}{2}$d. Sometimes decimals are employed, and most firms usually have their own pet method, and by these means slightly different results may be obtained.

Flooring and matching are usually calculated by the square (10 × 10 = 100) of 100 super. ft., though, to avoid calculations, it is customary to reckon squares by an arbitrary number of running feet which, though not quite exact, are recognized in the timber trade.

A square contains 300ft. of 4in. wide.
240 ,, 5 ,,
200 ,, 6 ,,
190 ,, $6\frac{1}{2}$ ,,
180 ,, 7 ,,

It should be remembered that a nominal width of 7in. seldom holds up more than $6\frac{3}{4}$in., and may be less, according to seasoning.

(*To be continued.*)

# Keystones.

**Paddington Town Hall** is to be enlarged at an estimated cost of £12,500.

**Mr. Aston Webb, R.A.,** has been elected a corresponding member of the Société Centrale des Architectes Français.

**Crewe Municipal Buildings** are now in course of erection. The architect is Mr. Henry T. Hare, F.R.I.B.A. The total cost, with furniture, will be about £18,000.

**Theatrical Furniture.**—Messrs. Oetzmann & Co., of Hampstead Road, W., have supplied the furniture and draperies for "The Flood Tide" at Drury Lane and "The Golden Silence" at the Garrick Theatre.

**"Some new Plans for Dwelling-Houses."**—We have received several criticisms of these plans, but owing to the pressure on our space we are obliged to hold them over till next week, when they will be published together with the author's replies.

**The new Elder Library, Govan,** has just been completed. It occupies a prominent site at the south-eastern corner of the Elder Park, where Langlands Road and Thomson Street intersect. The architect was Mr. J. J. Burnet, A.R.S.A., Glasgow.

**Northampton Institute.**—The syllabus for the forthcoming session has just been issued. The evening courses and classes in engineering, artistic crafts and other technological subjects began on Monday. The day courses in engineering begin on October 5th.

**The New Palace of Peace.**—It is announced from The Hague that the Dutch Government is about to invite an international competition for plans for the new Palace of Peace, in connection with The Hague Tribunal, which is to be erected out of funds granted by Mr. Carnegie.

**A Discovery in Denmark.**—An artistic highly-finished "sun chariot"—a structure of ancient religious and sacrificial import—was recently discovered in a moor of Seeland in Denmark. From the site where it was found, it is supposed to be not less than 3,000 years old. It is now in the museum at Copenhagen.

**By Order of the King,** and at his Majesty's expense, terra-cotta tiles have been substituted for the grey slates with which the new parish church at Crathie was roofed. A sounding-board has also been placed over the pulpit at the King's suggestion, as the acoustics of the building were somewhat defective.

**The Polytechnic School of Architecture,** Regent Street, W., commenced its winter session on Monday evening. An architectural and building trades course may be taken each evening for seven months at a fee, including certain text-books, of one guinea, and for this sum a student may attend classes every evening weekly in twenty subjects.

**The R.I.B.A. Papers** for the forthcoming session are as follows:—November 16th, "Le Trésor de Cnide et les Monuments de l'Art Ionien à Delphes," by M. J. T. Homolle. December 14th, "The Royal Victoria Hospital, Belfast: Its Inception, Design and Construction," by Messrs. W. Henman and Henry Lea. January 18th, "Architecture in Lead," by Mr. J. Starkie Gardner. February 15th, "The Bacteriological Disposal of Sewage from Isolated Buildings," by Prof. Frank Clowes. March 14th, "Plaster Decoration," by Mr. J. D. Crace. March 28th, "Electric Generating Stations," by Mr. C. Stanley Peach. April 18th, "The Statues of Wells Front, with some Contemporary Foreign Examples of Sculpture," by Mr. E. S. Prior. May 16th, "The Planning of Collegiate Buildings," by the Rev. J. B. Lock, M.A., Bursar of Gonville and Caius Coll. Camb.

**The Memorial Tablet to Mr. F. C. Penrose** will shortly be fixed in the crypt of St. Paul's Cathedral.

**A Memorial Statue of Queen Victoria** is to be erected at Nottingham at the north-west end of the market-place. Mr. Albert Toft, of South Kensington, has been commissioned to execute the work.

**Sixteen Skyscrapers.**—Mr. John D. Rockefeller has purchased a large amount of real estate in Cleveland, where he intends to erect sixteen skyscrapers at a cost of six millions sterling. The buildings will contain office suites.

**Decoration of Royal Exchange.**—Mr. A. Chevallier Tayler's panel for the decoration of the Royal Exchange "The, Entertainment of the Five Kings," has just been fixed into its allotted space on the walls of the ambulatory.

**A new Chancel for Ulverston Parish Church** is being erected from designs by Messrs. Austin & Paley, together with new choir stalls and carved oak screens, lengthening the chancel westward to the pulpit and reading lectern. Messrs. Hatch, of Lancaster, are the builders.

**What Stonehenge was.**—Mr. George Clinch, F.G.S., says that the recent researches of Professors Gowland and Judd, Sir Norman Lockyer and the late Mr. Penrose seem to afford overwhelming evidence that Stonehenge was not sepulchral and is not of the Bronze Age, but that it may be referred to the latter end of the Neolithic Age, and that its purpose was one connected with solar observation or perhaps sun-worship.

**R.I.B.A. Examinations.**—The Preliminary Examination will be held on November 3rd and 4th. Applications must be sent in on or before October 10th. The Intermediate Examination on November 3rd, 4th, 5th and 6th; applications by October 10th. The Final and Special Examinations from November 13th to 20th; applications by October 24th. Examinations qualifying for the office of district surveyor in London and of building surveyor under local authorities will be held on October 22nd and 23rd; applications by October 8th.

**"The Christian Churches of Athens"** was the subject of a lecture by Professor Gourlay to the Senior Architecture Class in the Glasgow and West of Scotland Technical College last Monday week. He began by referring to the way in which the Parthenon and other temples were altered to serve as Christian churches, and then divided the churches erected by the Christians in the Byzantine style into three distinct types, viz.: (1) Those possessing a large central dome, as may be seen in the church of St. Nicodemus; (2) those having a small dome at the "crossing" of the four arms of the Greek cross, as in the Old Cathedral or Metropolis; and (3) those with the basilican or Western type of plan, as in St. Mary's of the Great Monastery.

**The Hornsey Road Baths and Washhouses,** the largest of the three establishments under the control of the Islington Borough Council, were visited last week by the Society of Engineers. The baths were designed by Mr. A. Hessell Tiltman, F.R.I.B.A., and were opened in 1892; they were enlarged in 1899, and now consist of—Men's first-class swimming bath, 132ft. by 40ft.; men's second-class swimming bath, 100ft. by 35ft.; women's first-class swimming bath, 75ft. by 25ft.; women's second-class swimming bath, 75ft. by 25ft.; thirty-six men's first-class slipper baths; seventy-two men's second-class slipper baths; ten women's first-class slipper baths; and twenty-seven women's second-class slipper baths. The public washhouse contains forty-nine washing troughs and four hydros, and is fitted with fifty drying horses heated by steam.

# S.K. EXAMINATIONS, 1903.

## BUILDING CONSTRUCTION: Honours, Part II.

*(Concluded from last week's issue).*

[Answers to questions set in the Elementary examination were given in our issue for May 20th last, to the Advanced in the issue for May 27th, and to Honours, Part I., in the issue for July 8th.]

### Division III.

*65. Take accurate quantities of the masonry and brickwork of question 63. Bring them into bill and estimate the cost in detail. (Candidates who prefer to do so may assume the outside walls to be of brickwork 9in. thick, keeping the outer faces as shown; this note also applies to question 63.) (80)

Masonry.

| | | | | |
|---|---|---|---|---|
| | | | | Assume depth below ground to be 2ft. 6in. Assume footing to be 15in. by 30in. Assume wall to top of plinth to be 20in., above plinth to be 18in. |
| | 208<br>2 5<br>1·25 | 650 | 36 33·5<br>36 19 5<br>22 18 0<br>22 18·0<br>3<br>116 92 0<br>92<br>208 | Footings thick walls. |
| | 97<br>2·5<br>1·5 | 363·75 | 22 7·5<br>11 13·5<br>7 22·0<br>6<br>6 2<br>52 45·0<br>45<br>97 | Footings inside walls in store. |
| | 16<br>2·5<br>1·0 | 40 | | Extra at chimney breasts. |
| | 87<br>3·5<br>1·6 | 507·5 | 22<br>35·25<br>22·25<br>7·50<br>87·00 | to top of plinth. |
| | 86·50<br>9·50<br>1·50 | 1232·6 | 34·75<br>22 00<br>7·50<br>22 25<br>86·50 | Top of plinth to top of wall, opes to be deducted. |
| | 21·5<br>12 25<br>1·5 | 395 | 5·5<br>16·0<br>21·5 | Portion without plinth. |
| | | | | Yard wall to include scullery wall. |
| | 93·75<br>8·75<br>1·5 | 1230·5 | 32<br>19·25<br>6·50<br>18·00<br>18·00<br>93·75 | to bottom of coping. |
| | 1·5<br>3<br>1·5 | 6 75 | | at scullery. |
| | | 4426·25 | | |
| | 18<br>1·5<br>1·5 | 40·50 | | Deduct front wall offices taken to bottom of coping. |
| | | 4385·75 | | |
| | | | | Deduct window opes. |
| 6 | 6<br>3<br>1·5 | 162 | | |
| | 5·25<br>8·5<br>1·5 | 67 | | Door. |
| | 7·0<br>3·5<br>1·5 | 36·75 | | Yard door. |
| | 9<br>6<br>1·5 | 81·00 | | Offices doors. |
| | 4·5<br>5·0<br>1·5 | 33·75 | | Three small windows. |
| | | 380·50 | 4385·75<br>380·50 | |
| | | 4005·25 | | c.f. = 148·5 cub. yds. |
| | | | 21<br>14·5 × 8 = 116<br>17·5<br>36<br>190·5 | |
| | | 190 | | ft. lin. of double jambs and soffits. |
| | | | | Doors and windows. |
| 4 | 3·75 | 15·00<br>8·50<br>6·00 | | |
| | | 29·50 | | ft lin. window sills. |
| | | | | Door sills concrete. |
| | | 61 | | ft. lin coping yard wall. |
| | | | | Brickwork. |
| | 68<br>11 | | 14 8<br>2·5 14<br>6 22<br>1·5<br>22·5<br>45·5 45 5<br>68·0 | |
| | | 748 | | s. ft. half-brick walling, less opes. |
| 6 | 7<br>3 | 126 | | |
| | | 622 | | s. ft. half-brick walling. |
| | 12<br>2<br>14 | 336 | | c.f. chimney breasts and flues. |
| 2 | 6·5<br>3·5<br>2 | 91·0 | | c.f. chimney stacks includes offset and projn. |
| | | 427 | | |

*Masonry; Bill No. 3.*

*Preamble.*

All stone used in walls, &c., shall be freshly quarried, of clean fracture, of large size and good quality.

Sand to be clean and sharp.

Cement to be best Portland cement of approved quality, and to satisfy the tests specified.

Fine cement-mortar to be 1 of cement to 3 of sand. Coarse cement-mortar to be 1 of cement to 5 of sand and fine gravel.

"Cement-concrete" (the word concrete means cement-concrete) to be equal to 1 of cement to 5 of suitable clean ballast, except for special places and parts otherwise specified.

The masonry to have wide joints well filled with mortar.

The whole of the building to be in cement-mortar masonry. (*Note.*—The prices below to include for all moulds, boxings, casings, centres, templates, &c.)

| | | | | £ | s. | d. |
|---|---|---|---|---|---|---|
| 148·5 | c y. | General masonry (quoins to be allowed for in price) - | £1 | 148 | 10 | 0 |
| 190 | f. lin. | Double jambs and soffits doors and windows - | 9d. | 7 | 2 | 6 |
| 29·5 | f.l. | Window sills - - - | 3s. | 4 | 8 | 6 |
| 61 | f.l. | Coping yard wall - - - | 2s. | 6 | 2 | 0 |
| | | | | £166 | 3 | 0 |

*Brickwork; Bill No. 4.*

*Preamble.*

The bricks for chimney stacks, breasts and flues shall be best well burnt red bricks for the stacks, and kitchen breast and jambs of best compressed facing bricks in cement-mortar. Half-brick partitions to be well bonded with timber built with good stone-lime mortar.

| | | | | £ | s. | d. |
|---|---|---|---|---|---|---|
| 622 | s.f. | Half-brick walling (includes bond timbers) - - | 5d. | 12 | 19 | 2 |
| 12·5 | c.y. | Chimney breasts and flues in stone-lime mortar - - | 33s. | 20 | 12 | 6 |
| 3⅓ | c.y. | In chimney stacks (includes projections, cutting, &c.) - | 40s. | 6 | 13 | 4 |
| | | Extra kitchen breast in cement | | 0 | 10 | 0 |
| | | | | £40 | 15 | 0 |

66. Take accurate quantities for the signal and switch cabin, question 64, bring them into bill and estimate the cost in detail. (Omit levers and electrical arrangements.) (80)

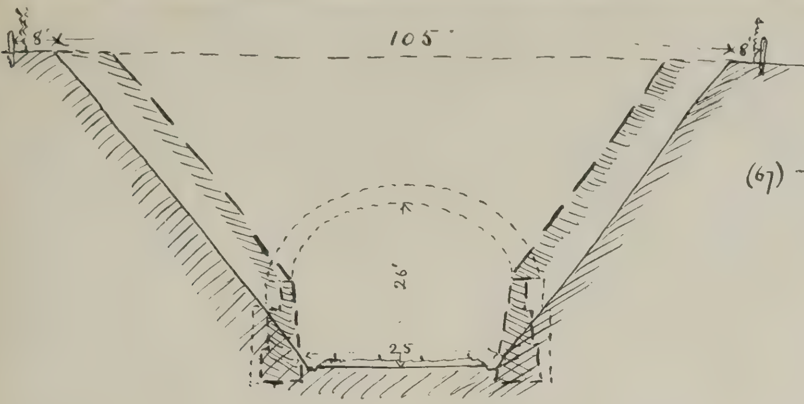
| | | | |
|---|---|---|---|
| | 86<br>1·5<br>1 | 129 | 22·75<br>22·75<br>40·50<br>86·00 c.f. concrete in found. |
| | 13·5<br>19 | 256·5 | ft. super concrete in floors. |
| | | 1 | Concrete hearth with curb 3ft. 6in. by 2ft. 6in. |
| | 86<br>1·5<br>1 | 129 | c.f. brickwork in footing.<br>21·25<br>21·25<br>40·50 |
| | 83<br>9·5<br>·75 | 591 | 83·00<br>c.f. up to sashes. |
| | 15<br>3·5<br>·75 | 40 | c.f. back walls to eave. |
| 2 | 10·5<br>7<br>¾ | 110 | c.f. gables, less glass. |
| | 6<br>15<br>1·25 | 112·5 | c.f. chimney breasts. |
| | 4<br>2<br>2 | 16 | c.f. chimney stack. |
| | | 998·5 | c.f. brickwork gross. |
| | | | *Brickwork Deductions.* |
| 4 | 6·5<br>3<br>·75 | 58·5 | c.f. doors. |
| 2 | 5<br>5·5<br>·75 | 41 | c.f. end windows. |
| | 4<br>2<br>·75 | 6 | |
| | 3<br>2·5<br>·75 | 6 | |
| | | 111·5 | |
| | | 998·5<br>111·5 | Forward. |
| | | 887·0 | c.f., say 33 c. yds. nett. |
| | 13·5<br>10·5 | 141 | s.f., say 1½ squares flooring. |
| | 17·75<br>17 | 302 | |
| | 12<br>17 | 204 | |
| | | 506 | 5 squares of slate roofing complete. |
| | | 1 | Chimney-pot. |
| | | 7·5 | l.f. window sills. |
| | | 3·5 | l.f. door sill. |
| | | | *Porch.* |
| | 6<br>6 | 36 | s.f. platform. |
| | 13·5<br>6 | 81·0 | |
| | 3<br>1·25 | 3·75 | |
| | 7<br>3 | 21 | |
| | | 105·75 | s.f. corrugated iron on ¾in. sheeting and felted; posts, framing and ladder complete. |
| | 25<br>5·5 | 137·5 | s.f. sashes in front and ends, including frames and posts. |
| | 3<br>2·5 | 7·5 | Small windows. |
| | 4<br>2 | 8 | |
| | | 153·0 | s.f. windows include fastenings. |
| | | 3 | Doors 7ft. by 3ft., complete with latches, locks and hinges. |
| | 17<br>3 | 51 | l.f. eaves-gutter. |
| | | 36 | l.f. down-spouting, 3 swan necks, 3 shoes. |
| | | 1 | Grate. |
| | | 1 | Cast-iron mantel. |
| | 23<br>5 | 115 | Glazing front and ends. |
| | | 7<br>8 | |
| | | 130 | s.f. 21oz. glass. |
| | 12·4<br>13·5 | 167 | |
| | 13·5<br>10 | 135 | |
| 4 | 7<br>3 | 84 | |
| | | 386 | 43 sq. yds., varnished. |
| 2 | 25<br>5·5 | 275 | s.f. windows, both sides. |
| 2 | 7·5<br>4 | 60·0 | s.f. doors. |
| | | 20 | s.f. both sides small sashes. |
| | | 12 | sq. yds. corrugated iron. |
| | | | Step-ladder, sides steps, railing. |

This being a small work, it is not necessary to separate into divisions.

*Preamble.*

Concrete 5 to 1 clean ballast and best Portland cement. Bricks to be all best facing bricks, English bond in stone-lime mortar. Timber red Baltic. Slates 24 by 12, copper nails, on sheeting felted. Porch galvanized corrugated on sheeting. Hob grate, stock locks brass thumb-latch on cabin door.

| | | | | £ | s. | d. |
|---|---|---|---|---|---|---|
| 3 | c.y. | Concrete - - - | £1 | 3 | 0 | 0 |
| 33 | c.y. | Brickwork to include jambs, quoins, &c. - - - | £2 | 66 | 0 | 0 |
| 1 | No. | Chimney-pot - - - | | 0 | 3 | 0 |
| 7·5 | l.f. | Window sills - - - | 3s. | 1 | 2 | 6 |
| 3·5 | l.f. | Door-sill - - - | 2s. 6d. | 0 | 8 | 9 |
| 26 | l.f. | Concrete capping and sill under front and end light - | 2s. | 2 | 12 | 0 |
| 1½ | Square. | Flooring includes joists, &c - | £2 10s. | 3 | 15 | 0 |
| 5 | Squares. | Roofing complete includes rafters, sheeting slates, &c., waste - - - | £6 | 30 | 0 | 0 |
| 36 | s.f. | Floor of porch - - | 8d. | 1 | 4 | 0 |
| 106 | s.f. | Corrugated on sheeting (nearly 1sq.) - - - | | 3 | 0 | 0 |
| | Item. | Posts, framing, ladder - | | 3 | 0 | 0 |
| 137·5 | s.f. | Windows, front and ends to include posts, framing, &c. | 2s. 6d. | 17 | 3 | 9 |
| 15·5 | s.f. | Small windows, ope size taken | 2s. | 1 | 11 | 0 |
| 3 | No. | Doors complete - - | £2 5s. | 6 | 15 | 0 |
| 51 | l.f. | Eaves-gutter - - | 6d. | 1 | 5 | 6 |
| 36 | l.f. | Down-spouting includes swan necks and shoes - - | 1s. | 1 | 16 | 0 |
| 1 | Item. | Grate and mantel - - | | 2 | 0 | 0 |
| 130 | s.f. | Glazing - - - | 1s. | 6 | 10 | 0 |
| 43 | s.y. | Varnished - - | 9d. | 1 | 12 | 3 |
| 31 | s.y. | Windows, painting - | 9d. | 1 | 3 | 3 |
| 7 | s.y. | Doors - - - - | 9d. | 0 | 5 | 3 |
| 2 | s.y. | Windows - - - | 9d. | 0 | 1 | 6 |
| 12 | s.y. | Corrugated iron - | 9d. | 0 | 9 | 0 |
| | Item. | Stepladder, handrail, &c. - | | 0 | 8 | 0 |
| | | | | £155 | 5 | 9 |



67. You have to carry a railway through a hill; the surface of the ground is 40ft. above the "formation" surface of the railway (that is, the surface which is prepared to receive the ballast to sustain the sleepers); the total breadth of the formation and drains is 25ft.; the slopes in open cutting would be secure at 1 to 1; the ground is easy to get and to fill. You have to decide whether—(*a*) you will have an open cutting with slopes the whole way down to the formation; (*b*) you will have an open cutting with revetment walls; (*c*) you will excavate a tunnel and line it with brickwork. Describe in what way you will seek to come to a sound conclusion (the question is one of cost only). Sketch half cross-sections of (*a*) open cutting the full depth; (*b*) open cutting with revetment walls 10ft. high; (*c*) the tunnel: stone cost 3s. a ton, bricks 35s. a thousand, Portland cement 40s. a ton, sand 2½d. a bushel. Find the cost of a yard forward on each assumption. (80)

The sketch shows in full lines (*a*) the open cutting, (*b*) in long dashes, cutting with revetment walls, and (*c*) in short dashes the tunnel. (*a*) Open cutting:—

| | £ | s. | d. |
|---|---|---|---|
| $\dfrac{\dfrac{105+25}{2}\times 40}{9}$ = 289 cub. yds. per yard forward at, say, 1s. = | 14 | 9 | 0 |
| | 14 | 9 | 0 |

Land needed, say, 40 sq. yds.

| | £ | s. | d. |
|---|---|---|---|
| (*b*) Excavation may be taken to be about the same as for (*a*), having regard to excavation for walls - - - - | 14 | 9 | 0 |
| Walls, 8 cub. yds., per yd. forward at £1 - - - | 8 | 0 | 0 |
| | 22 | 9 | 0 |

Land needed, say, 36 sq. yds.

(*c*) On sketch I show for tunnel abutments from which an arch springs and without invert, but for calculation I assume a circular tunnel, say, 30ft. in diameter, 2ft. thick brick-lining.

| | £ | s. | d. |
|---|---|---|---|
| Excavation, timbering, &c., 110 per yd. forward at £1 - - | 110 | 0 | 0 |
| 23 cub. yds. of brickwork at, say, £2 - - - - | 46 | 0 | 0 |
| | £156 | 0 | 0 |

No land needed.

In most cases (*a*), open cutting, will be found to be cheapest, but where land is valuable there may be a saving by applying (*b*). It is only on the assumption that land is very valuable that (*c*) will be justified.

Where it will be possible to get in the brickwork of the tunnel in an open cutting this will be found in the circumstances cheaper than tunnelling: there may be houses, roads, &c., to prevent this mode being adopted. I take it that the prices given for bricks, stones, cement and sand are to show that the cost of these things is normal at the place. In such operations the nature of the ground, such as involves careful timbering, difficulties with water, &c., &c., is much more important than the cost of building materials, and in estimating I have taken considerable latitude. The cost of land is the determining element in the question.

68. Coating iron with zinc in the manner called "galvanizing" protects the iron from rusting at scratches which expose the iron surface, and at small bare areas wider than scratches make; coating iron with tin does not protect the iron in the same way: explain this. (80)

When two metals are placed in contact and immersed in a liquid which might oxidize either, the metal which is electropositive to the other tends to oxidize more readily than the other, with the result that hydrogen is liberated at the surface of the metal which is less electropositive, and, briefly, this may be said to preserve the metal. If the oxide of the first metal is reasonably soluble the operation will continue, fresh surfaces being presented to the liquid as the oxide dissolves; and if the solubility of the oxide is just of that degree that the action will just be sufficient to preserve the second metal, and no more, the second metal may be preserved by a small expenditure of the first. Moreover, a single metal acted upon by an oxidizing liquid is affected locally, eating into holes, but two metals may be so combined that the whole body of No. 1 will almost disappear before No. 2 is seriously affected. Where ordinary rainwater is the liquid, zinc appears to answer suitably for No. 1; where iron is No. 2. Tin is also electropositive to iron, but the oxide of tin is extremely insoluble, so that the first very thin film of oxide at once interposes between the tin and the liquid, preventing any further action: any exposed parts of the iron (uncoated by the tin) are not protected, no hydrogen is sent to them, and they rust through.

69. Write instructions for a clerk of works (whom you have appointed to supervise the building of a large house; the work is being done by contract); they should regulate his dealing with doubtful materials and workmanship, his reports to you, his attendance on the work, &c., &c. (80)

(The model for a clerk of works is a superior constable appointed to see that the law is carried out faithfully and exactly in connection with works, for which his own experience as foreman or educated workman specially fits him. A clerk of works should be honest, constant in his attendance, tactful, intelligent. He should be absolutely controlled by the architect, who should have power of instant dismissal over him.)

I hereby appoint you Mr. John Ashton as clerk of works for the house at Scarsdale to be built for            by Messrs.            , contractors; wages at the rate of £3 a week so long as your services are required. This appointment is subject to the conditions that I shall have power at any time to dismiss you without notice of any kind, and I shall not be required to give any reason for such dismissal, and you shall have no claim for payment of any wages beyond the day of your dismissal.

You shall attend on the works each day from 7 a.m. to 5 p.m., Saturdays to 1 p.m. You shall study the specification and drawings so as to be perfectly familiar with the work proposed to be done. You will carefully refrain from accepting any responsibility in all matters in which the contractor is held to be responsible in setting-out, &c.; but if you observe what appears to you to be any error you shall direct attention to it both on the part of the contractor or his representative, and in your report to me if the matter is of importance.

You shall keep a regular diary in which you shall note (*a*) the exact hours at which you come upon the job and leave it each day, the time at which you arrive in the morning, the time at which you leave in the evening, and any intermediate times of absence. (*b*) Note each day the state of progress of the work, the number of men employed, your opinion of the quality of any materials brought upon the ground for the purpose of the works. (*c*) Mark down any measurements of depths of trenches for foundations, or any other similar measurements which it would be in any way difficult to make when the work is finished; note any receipt of instructions from me and your delivery of any such instructions, and working drawings to the contractor or his agent; write down and report to me exactly what the contractor says in reference to any such instructions or drawings. (*d*) Note any irregularity of any kind which you think I ought to be aware of, and report these matters to me. You have power to stop work at any part where, in your opinion, the workmanship, materials, or proportions in which materials are being mixed are below the standard of the specification; but such stoppages should not occur except when they are absolutely necessary. You should do all in your power to avoid interfering with the orderly course of the work, and you should in every way promote the contractor's interests, but without assuming responsibility where there is doubt; and always bear in mind that your duty is to the proprietor through me. You shall preserve all letters sent to yourself and you shall write your letters and reports in the duplicating book supplied to you, so that you may have copies of them for your own information. You shall keep your diary and all your letters and books under lock and key, and you shall not gossip to anybody whatever about your instructions or your observations.

You shall send a report to me by post every Saturday extracted from your diary, stating briefly what you think necessary for me to know; any pressing matter you shall report to me at once.

Keep these instructions separate from ordinary letters, but any further instructions which may be given you by me, whether written or taken down from my dictation, should be fastened to these instructions in the order of date on which you receive them.

(It is not always possible to have the absolute control of a clerk of works here supposed. Public boards appear to think that a comparatively low standard of qualification is needed for a clerk of works; they will appoint a man sometimes who is perfectly unsuitable, and it is rarely convenient to come before the board and explain publicly all the reasons for dispensing with a man's services: the writer has found it necessary to inform a clerk of works that he no longer recognized him as his agent, sending at the same time copies of the notice to the board and to the contractor. This may be done where power to do such things is given to the architect or engineer by the conditions of the contract.)

* 70. Trace, in ink, the plan of the cottage, also the dimensions and the writing—on the plan. (The lines should be opaque so as to give good prints.) (80)

# Electrical Notes.

**A Speed of 118 Miles an Hour** was achieved last Saturday by the electric trains now being tested by the Society for the Study of Electric Express Railways on the railway between Marienfeld and Zossen, near Berlin.

**The Newcastle-on-Tyne Quay Improvement Scheme,** for which the corporation have decided to promote a Bill in Parliament, is estimated to cost £599,000, of which £44,000 will be required for the elaborate electric equipment.

**Utilizing the Rhine.**—A project is on foot for utilizing the waters of the Rhine at Mulheim for the generation of electricity, which will be transmitted to the towns of Mulhouse and Fribourg, and the adjoining districts. It is estimated that about 15,000 h.p. will be available.

**South London Tramways.**—The electrification of the London County Council tramways between Kennington Gate and Streatham was begun last Thursday, when materials required for the work were distributed along the pavement in Brixton Road. The electrifying of the other County Council lines in South London is to be taken in hand without delay, and probably by next spring the horse car will have disappeared from that part of the metropolis.

**Steam-Turbine Plant for Lighting Stations.**—At Anderson, Indiana, U.S.A., two Westinghouse steam-turbine generating units, each of 400-kw. capacity, are being installed, together with a 20-kw. exciter direct connected to a Westinghouse standard engine. The feature of this is, that by substituting turbines for the old belted units, not only is sufficient space made available for the installation of a complete boiler plant, but room is left for possible future extensions without additions to the power-house itself.—Messrs. Brown, Boveri & Co. have in hand for the Rhenish-Westphalian electricity works a steam turbine coupled to a 5,000-kw. alternator and a 1,500-kw. dynamo, the output of the turbine being therefore about 7,000-kw. This will be the largest steam-driven set in the world. The steam consumption is guaranteed not to exceed 15·4lbs. per kw. hour, a record result, unless highly superheated steam is employed, and it is hoped that a still lower consumption will be attained.

**The Islington Electricity Works.**—A visit was paid to these works last week by the Society of Engineers. They are situate in Eden Grove, Holloway. The supply system is high-tension alternating, with street tank transformers as sub-stations. The boiler-houses are excavated so that the firing floor is about 13ft. below ground level. The steam pipes are arranged so that the boilers are coupled direct to the engines, and by means of any equalising range any boiler can be connected to any engine, or the whole system run together. By this means the large steam rings formerly favoured in electricity works have been avoided, and the condensation losses reduced. For street arc lighting there are five 30-light and three 50-light rectifiers, with two boards, and five alternating series, constant current transformers. The street lighting now consists of 473 lamps. The distributing system has hitherto consisted of cast-iron pipes containing double concentric rubber insulated steel-armoured cables as high-pressure feeders and distributors, also vulcanized india-rubber double concentric steel-armoured cables drawn into 3in. earthenware pipes. Extensions are now being laid with paper insulated twin arc cables, double concentric paper insulated high-tension feeders, and triple concentric paper insulated low-tension distributors, all laid on the solid system.

# A NEW COMPETITION.

### Prizes of £4 4s. offered.

THE sketching of old architecture, as we have already pointed out, is very much overdone. As an instance of this, we recently took occasion to observe what little real use was to be derived from roaming in Normandy, Belgium and other Continental places, now so easily accessible, and there making innumerable sketches of old churches, dilapidated streets and tumble-down houses: whilst almost ignoring modern work.

How few architects with sketch-books full of old architecture have taken half as much trouble with great civic buildings in London, Paris, Brussels or Berlin.

With the object of stimulating interest in the study of modern work, we offer two prizes of two guineas each—one for the best

**Pen-and-Ink Sketch**

and the other for the best

**Sketch in Wash**

of some detail on a modern building.

The word "modern" is intended to cover the last twenty or twenty-five years.

The word "detail" is intended to refer to some special treatment. It does not mean ornament simply. As examples of what might be special treatments we suggest the corner window of a house, the turret on a large hall, or the top-floor storey of some business premises.

The building may be of any kind and in any country.

The sketches should be made technical—that is, they should aim at showing the constructive skill of the architect; they must not be merely "pretty," nor impressionist skeletons of lines where the very details which one wishes to see are left to the imagination.

The line sketches should be drawn in black ink on white paper or Bristol board, and the requirements of reproduction should not be overlooked—strong clear lines; *gradation in tone being obtained by thinness of line and not by weakening the ink.*

The wash sketches should be in black and white, or sepia: they must *not* be in colour.

In making the award regard will be had for the intrinsic merit of the detail chosen as well as for the competitor's draughtsmanship.

All drawings must be sent in by the 31st of October, addressed to

The Editor of THE BUILDERS' JOURNAL,
9, East Harding Street,
Fetter Lane, London, E.C.

On the back of each must be written the title of the building from which the detail is taken, the name of the architect of the building, and the competitor's name and address. A competitor may send as many drawings as he pleases.

All drawings will be returned to their owners, but the Editor reserves the right to publish such as he choses.

To all competitors whose drawings are thus used, excepting the two prize drawings,

**A Copy of "Specification No. 6"**

will be sent.

If the competition proves to be a success additional prizes of a similar kind—though not necessarily for the same purpose—will probably be offered.

# Current Market Prices

## FORAGE.

| | | £ | s | d. | £ | s. | d |
|---|---|---|---|---|---|---|---|
| Beans .. .. .. | per qr | 1 | 14 | 0 | 2 | 0 | 0 |
| Clover, best .. .. | per load | 4 | 7 | 6 | 4 | 15 | 0 |
| Hay, best .. .. .. | do. | 3 | 15 | 0 | 4 | 5 | 0 |
| Sainfoin mixture .. | do. | 3 | 15 | 0 | 4 | 5 | 0 |
| Straw .. .. .. | do. | 1 | 10 | 0 | 2 | 0 | 0 |

## OILS AND PAINTS.

| | | £ | s | d. | £ | s. | d |
|---|---|---|---|---|---|---|---|
| Castor Oil, French .. | pet cwt. | 1 | 0 | 5 | | — | |
| Colza Oil, English .. | do. | 1 | 3 | 9 | | — | |
| Copperas .. .. | per ton | 2 | 0 | 0 | | — | |
| Lard Oil .. .. .. | per cwt. | 2 | 15 | 0 | 2 | 17 | 0 |
| Lead white. ground, carbonate .. .. | do. | 1 | 4 | 10 | | — | |
| Do red .. .. .. | do. | 1 | 0 | $4\frac{1}{2}$ | | | |
| Linseed Oil, barrels .. | do | 0 | 19 | 3 | | — | |
| Petroleum, American .. | per gal | 0 | 0 | 6 | 0 | 0 | $6\frac{1}{8}$ |
| Do Russian .. | do | 0 | 0 | $4\frac{5}{8}$ | 0 | 0 | 4 |
| Pitch .. .. .. | per barrel | 0 | 8 | 0 | | — | |
| Shellac, orange .. .. | per cwt | 9 | 2 | 0 | 9 | 5 | 0 |
| Soda, crystals .. .. | per ton | 3 | 2 | 6 | 3 | 5 | 0 |
| Tallow, Town .. .. | per cwt | 1 | 6 | 3 | 1 | 6 | 6 |
| Tar, Stockholm .. .. | per barrel | 1 | 0 | 6 | | | |
| Turpentine .. .. | per cwt. | 2 | 2 | 0 | | — | |

## METALS.

| | | £ | s | d. | £ | s. | d |
|---|---|---|---|---|---|---|---|
| Copper sheet, strong .. | per ton | 71 | 0 | 0 | | — | |
| Iron Staffs bar .. .. | do. | 6 | 5 | 0 | 6 | 10 | 0 |
| Do Galvanised Corrugated sheet .. | do. | 11 | 0 | 0 | 11 | 5 | 0 |
| Lead, pig, Soft Foreign .. | do. | 11 | 1 | 3 | 11 | 2 | 6 |
| Do. do. English common brands .. | do. | 11 | 7 | 6 | | – | |
| Do. sheet English 3lb. per sq. ft and upwards .. | do. | 14 | 0 | 0 | | — | |
| Do. pipe .. .. .. | do. | 15 | 0 | 0 | | — | |
| Nails, cut clasp, 3in to 6in. | do. | 9 | 5 | 0 | | — | |
| Do. floor brads ... | do. | 9 | 0 | 0 | | — | |
| Steel, Staffs.. Girders and Angles .. .. | do. | 5 | 15 | 0 | 7 | 2 | 6 |
| Do. do. Mild bars .. | do. | 6 | 7 | 6 | 7 | 2 | 6 |
| Tin, Foreign .. .. | do. | 118 | 5 | 0 | 118 | 15 | 0 |
| Do. English ingots .. | do. | 121 | 0 | 0 | 123 | 0 | 0 |
| Zinc, sheets, Silesian .. | do. | 23 | 10 | 0 | | – | |
| Do. do. Vielle Montaigne | do. | 23 | 15 | 0 | | — | |
| Do. Spelter .. .. | do. | 20 | 15 | 0 | 21 | 0 | 0 |

## TIMBER.

### SOFT WOODS.

| | | £ | s | d. | £ | s. | d |
|---|---|---|---|---|---|---|---|
| Fir, Dantzic and Memel | per load | 1 | 13 | 0 | 3 | 0 | 0 |
| Pine, Quebec, Yellow .. | do. | 5 | 5 | 0 | 6 | 5 | 0 |
| Do Pitch .. .. | do. | 2 | 12 | 0 | 3 | 3 | 0 |
| Laths log. Dantzic .. | per fath. | 4 | 10 | 0 | 5 | 10 | 0 |
| Do. St. Petersburg .. | do. | 7 | 5 | 0 | | — | |
| Deals, St. Petersburg Yellow, 1st, $2\frac{1}{2} \times 7$ | do. | 9 | 10 | 0 | | — | |
| Do. do. do. do. $3 \times 11$ | do. | 13 | 15 | 0 | | — | |
| Do. do. do. do. $3 \times 11$ | do. | 13 | 5 | 0 | | — | |
| Do. do. do. do. $3 \times 9$ | do. | 13 | 10 | 0 | | — | |
| Do. do, do. 2nd, $3 \times 9$ | do. | 10 | 5 | 0 | | — | |
| Do. do. White. 1st, $3 \times 11$ | do. | 10 | 15 | 0 | | — | |
| Do. Mesane, dry Yellow, 3rd, $3 \times 9$ | do. | 13 | 10 | 0 | | — | |
| Do. Umba, Yellow, 2nd, $3 \times 9$ | do. | 15 | 5 | 0 | | — | |
| Do. do. do. 3rd $3 \times 9$ | do. | 11 | 0 | 0 | | – | |
| Do. do. do. 4th, $3 \times 11$ | do. | 8 | 5 | 0 | | – | |
| Do. Nederkalix, Yellow, 1st, $4 \times 9$ | do. | 15 | 5 | 0 | | — | |
| Do do. do. do. $4 \times 12$ | do. | 13 | 5 | 0 | | — | |
| Do. Miramichi, dry Yellow Pine. 4th, $3 \times 12 \times 11$ft. | do. | 8 | 10 | 0 | | — | |
| Do. do. do. do. $3 \times 9 \times 13$ft | do. | 8 | 10 | 0 | | — | |
| Do. Kallskär, dry Yellow, 3rd, $3 \times 9$ | do. | 10 | 0 | 0 | | — | |
| Do. Husum, Yellow and few White. $3 \times 9$ | do. | 5 | 0 | 0 | | — | |
| Do. Trangsund, Unsorted Yellow, $3 \times 7$ | do. | 9 | 10 | 0 | | — | |
| Do. Kooda, Unsorted Yellow. $3 \times 7$ | do. | 8 | 0 | 0 | | — | |
| Do. Pernoviken, Yellow, 1st, $2\frac{1}{2} \times 7$ | do. | 9 | 15 | 0 | | — | |
| Do. do. do. 2nd, $2\frac{1}{2} \times 7$ | do. | 9 | 15 | 0 | | — | |
| Do. Archangel, White, 1st, $3 \times 9$ | do. | 12 | 10 | 0 | | — | |
| Do. do. Yellow 3rd, $3 \times 9$ | do. | 13 | 10 | 0 | | — | |
| Do. Montreal, Spruce, 2nd, $3 \times 9 \times 12$ft. | do. | 10 | 0 | 0 | | — | |
| Do. do. do 3rd, $3 \times 9 \times 12$ft. | do. | 9 | 10 | 0 | | — | |
| Battens, all kinds .. | do. | 4 | 17 | 6 | 5 | 15 | 0 |
| Flooring Boards 1in. prepared, 1st .. .. | per square | 12 | 0 | 0 | 11 | 0 | 0 |
| Do. 2nd .. .. | do. | 0 | 9 | 6 | | — | |
| Do. 3rd &c. .. .. | do. | 0 | 8 | 9 | | — | |

### HARD WOODS.

| | | £ | s | d. | £ | s. | d |
|---|---|---|---|---|---|---|---|
| Ash, Quebec .. .. | per load | 3 | 12 | 6 | | — | |
| Birch, Quebec .. .. | do. | 3 | 12 | 6 | 3 | 17 | 0 |
| Box, Turkey .. .. | per ton | 15 | 0 | 0 | 20 | 0 | 0 |
| Cedar, Cuba .. .. | per ft. sup. | 0 | 0 | $5\frac{1}{4}$ | | — | |
| Do. Honduras .. | do. | 0 | 0 | $5\frac{31}{32}$ | | — | |
| Do. Tobasco .. .. | do. | 0 | 0 | $4\frac{31}{32}$ | | – | |
| Elm, Quebec .. .. | per load | 4 | 0 | 0 | | — | |
| Mahogany, Average Price for Cargo, Honduras .. | per ft. sup. | 0 | 0 | $6\frac{1}{32}$ | | — | |
| Do. African .. | do. | 0 | 0 | $4\frac{3}{8}$ | | — | |
| Do. St. Domingo | do. | 0 | 0 | $3\frac{29}{32}$ | | — | |
| Do Cuba .. | do. | 0 | 0 | $5\frac{18}{32}$ | | 0 | 0 |
| Do. Lagos .. | do. | 0 | 0 | $3\frac{3}{16}$ | | — | |
| Do. Benin .. | do. | 0 | 0 | $4\frac{15}{16}$ | 0 | 0 | $5\frac{31}{32}$ |
| Do. Tobasco .. | do | 0 | 0 | $6\frac{11}{32}$ | 0 | 0 | $5\frac{1}{4}$ |
| Oak, Dantzic and Memel | per load | 3 | 5 | 0 | 3 | 15 | 0 |
| Do. Quebec ... | do. | 6 | 5 | 0 | 6 | 10 | 0 |
| Teak, Rangoon, planks .. | do. | 16 | 0 | 0 | 17 | 10 | 0 |

**Manchester Society of Architects.** — On September 19th a party of members of the Manchester Society of Architects visited some recent buildings at Alderley. Mr. McConnell's house (of which Messrs. Thomas Worthington & Son were the architects) was most admired, with its picturesque white-washed and stone-slated exterior, and very charming interior. A fireplace, with green tiles, beaten brass work and bosses of green enamel attracted much attention. The same architects' house for Mr. Agnew, a brick and stone building, contained much of interest. Mr. Alexander Graham's Epileptic Homes at Sandlebridge, now approaching completion, formed an interesting study of a novel type of building, in which the planning and all practical details have evidently been worked out with the greatest care and skill. The growing darkness prevented more than a hasty glance at Messrs. Worthington & Son's Convalescent Home, but this showed that when completed it will make a very delightful group of simple character.

# Complete List of Contracts Open.

| DATE OF DELIVERY. | WORK TO BE EXECUTED. | FOR WHOM. | FROM WHOM FORMS OF TENDERS MAY BE OBTAINED. |
|---|---|---|---|
| | **BUILDING:** | | |
| Oct. 1 | Carmarthen—House | —— | G. Morgan & Son, Architects, King Street, Carmarthen. |
| „ 1 | Hull—Riding School | Lieut.-Col. Lord Wenlock | A. E. Thompson, Architect, Manor Street, Hull. |
| „ 1 | Bradford—Office, Store, Shed, &c. | Corporation | J. Watson, Engineer, Town Hall, Bradford. |
| „ 1 | Withycombe, Raleigh—Stables, &c. | —— | E. H. Harbottle & Son, Architects, County Chambers, Exeter. |
| „ 2 | St. Mary's, Isles of Scilly—Coastguard Buildings | —— | Superintending Civil Engineer, H.M. Dockyard, Devonport. |
| „ 2 | Ballingry, Scotland—Enlargement of School | School Board | W. Birrell, 200 High Street, Kirkcaldy. |
| „ 2 | Newton St. Cyres, Exeter—Pair of Cottages | Quick Estate Trustees | Ellis, Son & Bowden, Surveyors, Bedford Chambers, Exeter. |
| „ 2 | Aberdeen—Bricks, Slates, &c. | Harbour Commissioners | R. G. Nicol, Engineer, Harbour Office, Aberdeen. |
| „ 2 | Great Crosby, Lancs—Library | Urban District Council | Anderson & Crawford, 36 Dale Street, Liverpool. |
| „ 3 | Bridlington—Shelter | Corporation | E. R. Matthews, Borough Surveyor, Town Hall, Bridlington. |
| „ 3 | Crewe—Re-plastering Chapel Walls | Town Council | E. Eaton-Shore, Borough Surveyor, Crewe. |
| „ 3 | Goole—Public Library | Urban District Council | H. B. Thorp, Architect, Aire Street, Goole. |
| „ 3 | Llanelly—Public Hall | —— | G. Jenkins, Architect, Llandilo. |
| „ 3 | Risca, Mon—Three Dwelling Houses | —— | E. N. Johnson, Architect, Risca, Mon. |
| „ 3 | Swadlingcote—Fire Station | Urban District Council | T. Kidd, Town Engineer and Surveyor, Swadlingcote. |
| „ 3 | Cork—Gate Lodge | Queen's College | H. W. Williams, Secretary, Office of Public Works, Dublin. |
| „ 5 | Pickering—School | Grammar School Governors | J. Bilson, 23 Parliament Street, Hull. |
| „ 5 | Belfast—Buildings | Maternity Hospital | A. Ferguson, Surveyor, Belfast. |
| „ 5 | Birmingham—Police Station | Watch Committee | J. Price, City Engineer, Council House, Birmingham. |
| „ 5 | Portsoy, Scotland—Shops, &c. | —— | R. B. Pratt, Architect, Town and County Bank Buildings, Elgin. |
| „ 5 | Salford—Wall | —— | Borough Engineer, Town Hall, Salford. |
| „ 5 | Manchester—Cement, Bricks, &c. | Lancs & Yorks Railway Co. | Mr. Duffin, Stores Department, Osborne Street, Manchester. |
| „ 6 | Harrington, Cumberland—Vicarage | —— | J. F. Curwen, 26 Highgate, Kendal. |
| „ 6 | Legacy, near Ruabon, North Wales—Cottage | Great Western Railway Co. | Stationmaster, Ruabon Station, North Wales. |
| „ 6 | Llandenny, Mon—Cottage | Great Western Railway Co. | Engineer, Newport Station, Mon. |
| „ 6 | London, N.—Pulling-down and Rebuilding | Shoreditch Borough Council | J. R. Dixon, Engineer, Town Hall, Old Street, E.C. |
| „ 6 | London, E.C.—Two Underground Conveniences | Corporation | Engineer, Guildhall, E.C. |
| „ 6 | London, E.—Repairing, &c., Pumping Station | London County Council | Engineer's Department, County Hall, Spring Gardens, S.W. |
| „ 7 | Naas, Ireland—Sixteen Labourers' Cottages | Rural District Council | D. G. Purcell, Clerk, Council Offices, Naas. |
| „ 7 | Fulham—Lodges, Refreshment Rooms, Lavatories, &c. | Borough Council | F. Wood, Borough Engineer, Town Hall, Fulham, S.W. |
| „ 7 | South Kirkby, Yorks—Caretaker's Lodge | Hemsworth R.D.C. | Mr. Richardson, Architect, Hemsworth. |
| „ 8 | Halifax—Extensions | Campbell Gas-engine Co. | Jackson & Fox, 7 Rawson Street, Halifax. |
| „ 9 | Walton Creek, Essex—Coastguard Station | Admiralty | Director of Works Dept., 21 Northumberland Av., London, W.C. |
| „ 10 | Ballinamallard, Ireland—Business Premises | —— | T. Elliot, 37 Darlings Street, Enniskillen. |
| „ 10 | Downpatrick, Ireland—Seven Cottages | Rural District Council | E. Nolan, Council's Engineer, Council Offices, Downpatrick. |
| „ 10 | Pontefract—Library | —— | Garside & Pennington, Architects, Pontefract. |
| „ 12 | Margate—Wall | —— | E. A. Borg, Borough Surveyor, Town Hall, Margate. |
| „ 12 | Padiham, Lancs—Widening Bridge | County Council | County Bridgemaster, Preston, Lancs. |
| „ 12 | Aberystruth—Classroom, Cloakrooms, &c. | School Board | R. L. Roberts, Board's Architect, Abercarn. |
| „ 13 | Letterkenny, Ireland—Floors | Donegal Asylum Committee | J. P. M'Grath, Archt., Commercial Bldgs., Foyle St, Londonderry. |
| „ 13 | Bethnal Green—Clearing Site | Borough Council | Borough Surveyor, Town Hall, Bethnal Green. |
| „ 15 | Greenwich—Depot Buildings | Borough Council | Borough Engineer, Town Hall, Greenwich Road, S.E. |
| „ 15 | Greenwich—Underground Convenience | Borough Council | Borough Engineer, Town Hall, Greenwich Road, S.E. |
| „ 23 | Portsmouth—School | Education Committee | Rake & Cogswell, Architects, Prudential Buildings, Landport. |
| | **ENGINEERING:** | | |
| Oct. 1 | Utrecht, Netherlands—Electricity Supply Station | Town Council | Gemeente-Secretaire of Utrecht. |
| „ 1 | Angram, Bradford—Masonry Dam | Corporation | J. Watson, Waterworks Engineer, Town Hall, Bradford. |
| „ 1 | Bradford—Light Railways | Corporation | J. Watson, Waterworks Engineer, Town Hall, Bradford. |
| „ 1 | Bradford—Service Reservoirs | Corporation | J. Watson, Waterworks Engineer, Town Hall, Bradford. |
| „ 1 | Bradford—Masonry Dam, &c. | Corporation | J. Watson, Waterworks Engineer, Town Hall, Bradford. |
| „ 1 | Manchester—Electricity Meters | Electricity Committee | F. C. Hughes, Sec. Electricity Depart., Town Hall, Manchester. |
| „ 1 | Felixstowe—Sea Wall &c. | Urban District Council | J. Russel, 16 Victoria Street, Westminster, S.W. |
| „ 3 | Milford, Ireland—Extension of Pipe Line | Rural District Council | J. M. Robinson, 7 East Wall, Londonderry. |
| „ 5 | Dublin—Electric Crane | Port and Docks Board | J. P. Griffith, Engineer, East Wall, Dublin. |
| „ 5 | Brighton—Tramway Materials, &c. | Town Council | F. J. Tillstone, Town Clerk, Town Hall, Brighton. |
| „ 5 | Nottingham—Pumping Engines | Water Committee | S. Moore, General Manager, Water Dep., St. Peter's Sq., Nottingham |
| „ 5 | Bishop Auckland—Waterworks | Rural District Council | C. Johnston, Surveyor, Cradock Street, Bishop Auckland. |
| „ 6 | London, S.E.—Steam Engines | London County Council | County Hall, Spring Gardens, S.W. |
| „ 6 | Vauxhall—Steel Superstructure and Granite Piers of Bridge | London County Council | Engineer's Department, County Hall, Spring Gardens, S.W. |
| „ 6 | Oldham—Electric Lighting | Corporation Electricity Committee | S. W. Newington, Resident Engineer, Greenhill Electricity Works, Oldham. |
| „ 6 | London, E.—Wharf, &c. | Great Western Railway Co. | Engineer, Paddington Station, London, W. |
| „ 6 | Swindon—Reconstructing Bridge | Great Western Railway Co. | Engineer, Paddington Station, London, W. |
| „ 7 | Gorton, Lancs—Refuse Destructor | Urban District Council | C. G. Lomax, 37 Cross Street, Manchester. |
| „ 7 | Hemsworth, Yorks—Extension of Water Main | Rural District Council | T. H. Richardson, Engineer, Hensworth. |
| „ 7 | Swindon—Bridges | Corporation | Lacey & Sillar, 73 King Street, Manchester. |
| „ 7 | Winwick, Warrington—Fire Main | Visitors' Committee | J. P. Muspratt, Clerk, County Offices, Preston. |
| „ 8 | Swansea—Cofferdam | Harbour Trustees | A O. Schenk, Engineer, Harbour Offices, Swansea. |
| „ 8 | Manchester—Telephone Pipes | Highways, &c., Committee | City Surveyor, Town Hall, Manchester. |
| „ 9 | Birkenhead—Electric Wiring | Education Committee | W. Bates, Electrical Engineer, Craven Street, Birkenhead. |
| „ 10 | Valencia—Port Works | Committee | Secretaria de la Junta de obras del, puerto de Valencia. |
| „ 13 | Letterkenny, Ireland—Heating, &c | Asylum Committee | J. P. M'Grath, Architect, Commercial Bldgs, Foyle St., Londonderry. |
| „ 15 | Ipswich—Pilework, &c. | Dock Commissioners | T. Millar 9 Thoroughfare, Ipswich. |
| „ 19 | Salford—Machinery | Tramways Committee | General Manager, 32 Blackfriars Street, Salford. |
| „ 19 | Johannesburg—Electrical Plant | Municipal Council | Mordey & Dawbarn, 82 Victoria Street, Westminster, S.W. |
| „ 26 | Harrogate—Iron and Glass Pump-room and Colonnade | —— | F. Bagshaw, Borough Engineer, Municipal Offices, Harrogate. |
| „ 30 | Marina, Upper Barracca, Malta—Lift | Crown Agents for the Colonies | Receiver-General and Director of Contracts, Valletta, Malta. |
| „ 31 | Tregaron, Wales—Reservoir, &c. | District Council | J. Davis & Son, Engineers, Llanelly. |
| Nov. 2 | Kingsbridge, Devon—Waterworks | Urban District Council | T. W. Latham, Engineer Council Offices, Kingsbridge. |
| „ 2 | Perth, Western Australia—Railway Carriages | —— | Agent-General for Western Australia, 15 Victoria St., Westminster. |
| Dec. 15 | Los Andes, Chili—Railway | —— | Commercial Intelligence Branch, Board of Trade, 50 Parliament Street, S.W. |
| 1904. Feb. 1 | Cairo—Three Road Bridges over Nile | Ministry of Public Works | Commercial Intelligence Branch, Bd. of Trade, 50 Parliament St., S.W |
| No date | London, W.C.—Two Boilers | Savoy Hotel Directors | Kincaid, Waller, Manville & Dawson, 29 Gt. George St., Westmnstr. |
| | **FURNITURE:** | | |
| Oct. 2 | Ulverston—Furnishing | —— | J. W. Grundy & Son, Architects, Central Buildings, Ulverston. |
| | **IRON AND STEEL:** | | |
| Oct. 2 | Aberdeen—Ironmongery, &c. | Harbour Commissioners | R. G. Nicol, Engineer, Harbour Office, Aberdeen. |
| „ 3 | Bridlington—Ironwork | Property Committee | Mangnall & Littlewoods, 42 Spring Gardens, Manchester. |
| „ 5 | Johannesburg—Rails, &c. | Municipal Council | Mordey & Dawbarn, 82 Victoria Street, Westminster, S.W. |
| „ 5 | Bath—Strainers, &c. | Waterworks Committee | W. Fox and R. A. Tatton, 5 Victoria Street, Westminster, S.W. |
| „ 5 | Brighton—Tramway Materials, &c. | Town Council | T. J. Tillstone, Clerk, Town Hall, Brighton. |
| „ 5 | Margate—Hurdles | Town Council | A. Latham, 15 Cecil Square, Margate. |
| „ 5 | Manchester—Stores | Lancs & Yorks Railway Co. | Mr. Duffin, Stores Dept., Osborne Street, Manchester. |
| „ 6 | London, W.—Steel Bridge Girders, &c. | Great Western Railway Co. | Engineer, Paddington Station, London, W. |
| „ 7 | Leigh, Lancs—Fencing | Corporation | T. Hunter, Borough Engineer, Bank Chambers, Leigh, Lancs. |
| „ 19 | Colchester—Iron Fence | Guardians | C. E. White, 57 North Hill, Colchester. |
| „ 21 | Adelaide, South Australia—Railway Stores | —— | Chief Mechanical Engineer, Islington, South Australia. |

# Complete List of Contracts Open —*continued.*

| DATE OF DELIVERY. | WORK TO BE EXECUTED. | FOR WHOM. | FROM WHOM FORMS OF TENDERS MAY BE OBTAINED. |
|---|---|---|---|
| | **PAINTING AND PLUMBING:** | | |
| Oct. 2 | Aberdeen—Painters' Work | Harbour Commissioners | R G. Nicol. Engineer, Harbour Offices, Aberdeen. |
| „ 5 | Manchester—Rape Oil | Lancs & Yorks Railway Co. | Mr. Duffin, Stores Depart , Osborne Street, Manchester. |
| „ 6 | Stratford—Re-painting, &c., Buildings | London County Council | Engineer's Department, County Hall, Spring Gardens, S.W. |
| | **ROADS AND CARTAGE:** | | |
| Oct. 1 | Glasgow—Channel Stones, &c. | Corporation | J. Lindsay. Clerk, 64 Cochrane Street, Glasgow. |
| „ 1 | Normanton, Yorks—Flagging &c. | Urban District Council | C. B. L. Fernandes, Clerk, Council Offices, Normanton. |
| „ 1 | Salford—Widening Roads | Improvement Committee | Borough Engineer, Town Hall, Salford. |
| „ 1 | Uttoxeter—Making-up Road | Urban District Council | R. W. Marshall, Council's Surveyor, Town Hall, Uttoxeter. |
| „ 2 | Aberdeen—Stones, Road Metal, &c. | Harbour Commissioners | R. G. Nicol, Engineer, Harbour Offices. Aberdeen. |
| „ 2 | Hull—Street, &c., Works | Corporation | A. E. White, City Engineer, Town Hall, Hull. |
| „ 3 | Berwick-on-Tweed—Kerb, &c. | Corporation | Borough Surveyor, Wallace Green, Berwick. |
| „ 3 | Southowram—Granite and Dross | Urban District Council | R. W. Evans. Clerk, Commercial Bank Chambers, Halifax. |
| „ 5 | Manchester—Way Materials | Lancs and Yorks Rly. Co. | Mr. Duffin, Stores Department, Osborne Street, Manchester. |
| „ 5 | Camberley, Surrey—Road Works | Frimley U.D.C. | F. C. Uren Surveyor, High Street, Camberley. |
| „ 5 | Runcorn—Street Works | Rural District Council | J. Swinton, 19 Cliff View, Stockton Heath, near Warrington. |
| „ 6 | Aspull, near Wigan Private Street Works | District Council | Heaton, Ralph & Heaton, Surveyors, Wigan. |
| „ 6 | London, S.W.—Gravel | London County Council | Parks Department, 11 Regent Street, S W. |
| „ 6 | Walsall—Re-making, &c. | Corporation | Borough Surveyor, Bridge Street, Walsall. |
| „ 12 | Hanwell—Making-up Roads, &c. | Urban District Council | S. W. Barnes, Surveyor, Council Offices, Church Road West, Hanwell, W. |
| „ 12 | Nantymoel and Blaengarn, Wales—Street Works | Ogmore and Garw U.D.C. | H. D. Williams, Surveyor, Council Offices, Blackmill, Bridgend. |
| „ 13 | Carshalton—Road Materials, &c. | Urban District Council | W. W. Gale, Council Offices, High Street, Carshalton. |
| | **SANITARY:** | | |
| Oct. 1 | Withycombe, Raleigh—Drainage, &c. | — | E. H. Harbottle & Son, Architects, County Chambers, Exeter. |
| „ 1 | Blaydon-on-Tyne—Scavenging | Urban District Council | R. Biggins, Sanitary Inspector, Council Offices, Blaydon-on-Tyne. |
| „ 1 | Featherstone, Yorks—Sewerage Works | Rural District Council | F. B. Rothera, Engineer, District Council Offices, Featherstone. |
| „ 1 | St. Budeaux—Sewers, &c. | Rural District Council | F. A. Clark, 83 Old Town Street, Plymouth. |
| „ 2 | Aberdeen—Drain Pipes, &c. | Harbour Commissioners | R. G. Nicol, Engineer, Harbour Offices, Aberdeen. |
| „ 5 | Leeds—Sewerage Works | Rural District Council | Spinks & Pilling, 20 Park Row, Leeds. |
| „ 5 | Barcelona, Spain—Sewerage and Drainage Works | — | Municipal Authorities. Barcelona. |
| „ 6 | Becton and Erith, Kent—Lime, &c. | London County Council | Engineer's Department, County Hall, Spring Gardens, S.W. |
| „ 6 | London—Underground Conveniences | Streets Committee | Engineer, Public Health Department, Guildhall, E.C. |
| „ 7 | Canklow, near Rotherham—Sewers, &c. | Rural District Council | B. Hey, 29B High Street, Rotherham. |
| „ 7 | Acton Green, W.—Sewers, &c. | — | Monson & Sons, Architects, Grosvenor House, Acton Vale, W. |
| „ 8 | Cheade, Staffs—Sewer, &c. | Rural District Council | Clerk, Union Offices, Cheadle. |
| „ 12 | Hastings—Sewer, &c. | Corporation | P. H. Palmer, Borough Engineer, Town Hall, Hastings. |
| „ 13 | Ilford—Sewage Works Extension | Urban District Council | H. Shaw, Engineer, Town Hall, Ilford. |
| | **TIMBER:** | | |
| Oct. 2 | Aberdeen—Timber | Harbour Commissioners | R. G. Nicol, Engineer, Harbour Offices, Aberdeen |
| „ 5 | Manchester—Timber, Creosote | Lancs and Yorks Rly. Co. | Mr Duffin, Stores Department, Osborne Street, Manchester. |
| „ 6 | Leyton—Oak Fencing, &c. | Urban District Council | W. Dawson, Surveyor, Town Hall, Leyton. |
| „ 6 | London, W.—Timber | Great Western Railway Co. | G. K. Mills, Secretary, Paddington Station, W. |

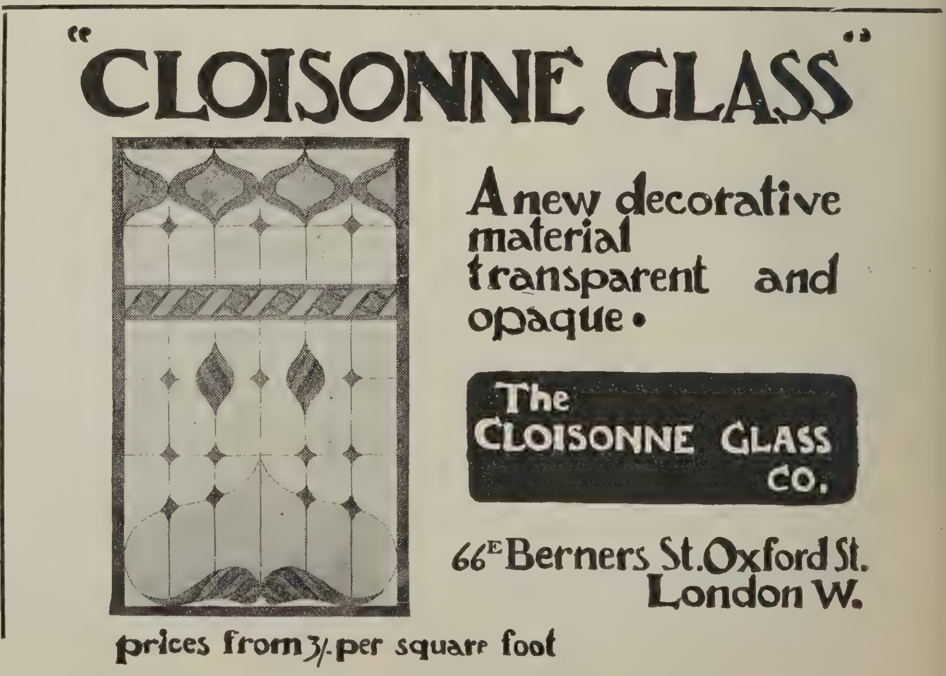
# List of Competitions Open.

| DATE OF DELIVERY. | DESIGNS REQUIRED. | AMOUNT OF PREMIUM. | DEPOSIT REQUIRED FOR CONDITIONS, &c. | BY WHOM ADVERTISED. |
|---|---|---|---|---|
| Oct. 1 | Heywood—Library | £30, £20, £10. | £1 1s. | J. A. Settle, Borough Engineer, Municipal Buildings, Heywood. |
| „ 2 | Bromley, E.—Public Library | £75, £25. | 10s. 6d. | H. Heckford, Borough Surveyor, Council Offices, High Street, Poplar. |
| „ 7 | Saltwood—Sewage Disposal | £31 10s. | — | R. Lonergan, 11 Cheriton Place, Folkestone. |
| „ 12 | Rawtenstall—Free Library, &c. | £100, £50, £30. | £2. | A. W. Lawson, Borough Surveyor, Municipal Offices. Rawtenstall. |
| „ 26 | Harrogate—Iron & Glass Pump-room & Colonnade | — | £1 | F. Bagshaw, Borough Engineer, Municipal Office, Harrogate. |
| Nov. 14 | Tamworth—Public Library | £20, £10, £5 | — | J. Matthews, Town Clerk, Bolebridge Street, Tamworth. |
| „ 21 | Sunderland—Additions & Alterations to Town Hall | £100, £50, £25. | £5. | J. W. Moncur, Borough Engineer, Town Hall, Sunderland. |
| Dec. 1 | Wakefield—Reconstruction of Cattle Market | £52 10s., £26 5s. | £2. | E. R. Langhorne, Clerk to Governors of Charities, Wakefield. |
| 1904 Mar. 31 | Vienna—Machinery to Lift Boats on Canal | 100,000, 75,000 & 50,000 kronen. | — | Austro-Hungarian Consulate-General, 22 Laurence Pountney Lane, E.C. |

# Trade and Craft.

### A New Sash Lock.

Mr. R. Clinton Hughes, of 56 Gracechurch Street, E.C., is the maker of the "Wall" patent sash lock. This consists of a spring bolt which is screwed to the top of the lower sash so that it presses against the side rail, the end of the bolt having a small roller to allow the sash to be easily raised. A series of holes are bored in the side rail and into these the end of the bolt passes, thus locking the windows, not only when shut, but also when open: this is the feature of the device. To make the fastening double secure, a hasp is provided, so that the bolt may be padlocked. This would be specially useful when, for example, the house was left untenanted for a time, as during holidays. The bolt has a good stout head with a milled edge; this affords a firm grip and makes adjustment easy. The bolt is claimed to be invaluable for bedrooms, hospitals, sanatoria and other buildings requiring ventilation with safety. It cannot be tampered with by a knife nor cut by a burglar's hack-saw, the position of the sash lock even when the window is open being beyond the reach of anyone outside.


"CLOISONNE GLASS"

A new decorative material transparent and opaque •

The CLOISONNE GLASS CO.

66E Berners St. Oxford St.
London W.

prices from 3/. per square foot

# Tenders.

*Information from accredited sources should be sent to "The Editor" at latest by noon on Monday if intended for publication in the following Wednesday's issue. Results of Tenders cannot be accepted unless they contain the name of the Architect or Surveyor for the work.*

*Addressed postcards on which lists of tenders may be stated will be sent post free on application to the Manager,* BUILDERS' JOURNAL, 9, *East Harding Street, E.C.*

**Barry Dock (Cardiff).**—For the erection of a new branch post office at Barry Dock, Cardiff, for H.M. Office of Works, &c.:—

| | Portland stone. | Quarfella stone. |
|---|---|---|
| Lattey & Co., Ltd. | £6,250 0 0 | £6,310 0 0 |
| H. S. Rendell | 6,190 10 6 | 6,275 15 9 |
| Lloyd & Tape | 6,150 10 0 | 6,270 0 0 |
| J. Prout | 6,037 18 6 | 6,105 6 6 |
| W. Williams | 4,818 0 0 | 5,348 0 0 |

**Birmingham.**—For alterations to Birmingham post-office, for H.M. Office of Works, &c.:—

| | | A. |
|---|---|---|
| T. Rowbotham | £2,550 | £22 |
| G. H. Marshall | 2,497 | 45 |
| J. E. Harper | 2,494 | 42 |
| J. Barnsley & Sons | 2,318 | 30 |
| T. Elvins | 2,300 | 10 |
| W. & J. Webb | 2,220 | 20 |
| G. Webb | 2,215 | 28 |
| W. Bishop | 1,997 | 20 |
| W. Hopkins | 1,995 | 20 |

[A. Credit old materials.]

**Chatham.**—For the erection of naval and military home, The Brook, Chatham, for the Salvation Army. Mr. A. Gordon, architect and surveyor, 97, Queen Victoria Street, London, E.C.:—

| | |
|---|---|
| T. Denne, Kent | £7,900 |
| J. Wood & Sons, Maidstone | 7,856 |
| G. Wallis & Sons, Maidstone | 7,510 |
| H. Richardson, Kent | 7,484 |
| M. Patrick, London, S.W. | 7,200 |
| West Brothers, Rochester | 7,199 |
| C. E. Skinner, Chatham | 7,177 |
| Pollard & Brand, South Tottenham | 7,089 |
| Adcock, Dover | 6,940 |
| H. E. Phillips,* New Brompton | 6,500 |

* Accepted.

**Cheltenham.**—For laying a 12in. pumping main from Tewkesbury to Cheltenham, a distance of about 8½ miles, including crossing the River Avon, for the Corporation. Mr. J. S. Pickering, water engineer:—

| | |
|---|---|
| G. Holloway, Wolverhampton | £5,914 0 0 |
| Cruwys & Hobrough, Gloucester | 5,287 11 4 |
| B. Firth & Co., York | 4,821 3 7 |
| J. W. Dean & Co., Margate | 4,521 19 11 |
| M. Williams & Co., Cheltenham | 4,423 9 7 |
| Ross & Crabtree, Shipley, Yorks | 4,282 12 0 |
| J. Riley,* Cheltenham | 4,144 11 11 |

* Accepted.

**Chepping Wycombe (Bucks).**—For the erection of a town hall in Queen Victoria Road. Messrs. Bateman & Hale, architects, Birmingham:—

| | |
|---|---|
| J. Smith & Son, Birmingham | £12,197 0 0 |
| Barnsley, Birmingham | 12,169 0 0 |
| Sapcote, Birmingham | 12, 43 0 0 |
| Rowbotham, Birmingham | 12,010 0 0 |
| Rudd, Grantham | 11,834 3 7 |
| Stephens & Bastow, Bristol | 11,689 0 0 |
| Collins & Godfrey, Tewkesbury | 11,536 0 0 |
| Halliday, Stamford | 11,545 0 0 |
| Webster & Cannon, Aylesbury | 11,388 0 0 |
| Groves & Sons, Milton-under-Wych-Wood | 11,280 0 0 |
| W. Lee & Son, High Wycombe | 11,273 0 0 |
| Lovatt, Wolverhampton | 11,190 0 0 |
| Darlington, Amersham | 11,180 0 0 |
| Parnell, Rugby | 11,177 11 0 |
| Lovell, Marlow | 11,127 0 0 |
| W. H. Gaze & Son, Kingston-on-Thames | 10,971 0 0 |
| H. Flint, High Wycombe | 10,787 0 0 |
| G. H. Gibson, High Wycombe | 10,738 0 0 |
| C. H. Hunt & Son, High Wycombe | 10,373 0 0 |

**Croydon.**—For the erection of a new cookery and laundry centre at the Ecclesbourne Road Schools, for the Croydon School Board. Mr. R. Ridge, architect. Quantities by Mr. Mansfield Price:—

| | |
|---|---|
| Funnell & Co. | £1,853 18 6 |
| J. Smith & Sons | 1, 84 0 0 |
| W. Smith & Sons* | 1,743 0 0 |
| Bulled & Co. | 1,739 0 0 |

* Accepted.

**Croydon.**—For alterations and additions and providing 404 additional places in the boys', girls' and juniors' departments at the Whitehorse Road Schools, for the Croydon School Board. Mr. R. Ridge, architect. Quantities by Messrs. Downing & Haskins:—

| | |
|---|---|
| J. Smith & Sons | £3,947 0 |
| Funnell & Co. | 3,912 15 |
| W. Smith & Sons | 3,890 0 |
| Bulled & Co.* | 3,625 0 |

* Accepted.

**Cudworth (Yorks).**—For the construction of 6,770 lineal yards of stoneware drains, with the necessary manholes, lampholes and other works. Messrs. Fairbank & Son, engineers, Lendal Chambers, York:—

| | |
|---|---|
| T. E. Sugden, Keighley | £6,900 0 0 |
| C. B. Newton, Carlisle | 6,751 8 0 |
| Parker & Sharpe, York | 6,232 5 0 |
| Parkin & Co., Leeds | 5,989 2 7 |
| F. J. Salmon & Co., Barnsley | 5,550 0 0 |
| W. Brigg, Bradford | 5,536 16 2 |
| Jones Brothers, Stairfoot | 5,406 14 5 |
| G. & T. Wilson, Wakefield | 5,095 1 7 |
| Morley & Sons, Keighley | 4,991 9 5 |
| G. Mellor, Barnsley | 4,858 19 3 |
| M. Arundel,* East Ardsley, Wakefield | 4,770 13 6 |
| A. & C. Harris, Leeds | 4,730 0 0 |
| A. Dickinson, Leeds | 4,675 0 0 |

* Accepted. [Engineer's estimate, £5,450.]

**Dursley and Cam (Glos).**—For sewerage works for Dursley and Cam, Glos., for the Dursley Rural District Council:—

| | |
|---|---|
| W. A. Green, Clevedon | £19,973 0 0 |
| J. Byard & Son, Gloucester | 17,500 0 0 |
| W. & J. Bennett, Bristol | 15,744 0 0 |
| A. King & Sons, Gloucester | 15,288 0 0 |
| S. Wood, Bristol | 14,901 7 7 |
| J. E. B. James, Bristol | 14,220 15 0 |
| J. Riley,* Cheltenham | 13,431 19 11 |
| E. H. Page, Cardiff | 13,343 0 3 |
| J. H. Macdonald, Blaina, Mon. | 12,928 7 2 |
| T. Free & Co., Fishponds | 12,441 0 0 |
| G. Rutter, Cardiff | 12,062 16 8 |

* Accepted.

**King's Heath (near Birmingham).**—For the construction of about three miles of electric tramway permanent way, for the Urban District Council of King's Norton and Northfield. Mr. A. W. Cross, engineer, 23, Valentine Road, King's Heath:—

| | |
|---|---|
| R. W. Fitzmaurice & Co. | £29,262 2 3 |
| J. White, jun. | 24,746 16 0 |
| Macartney, McElroy & Co., London | 24,145 2 0 |
| G. Trentham | 22,108 11 9 |
| J. Branton, Hull | 20,474 18 4 |
| R. C. Brebner & Co., Edinburgh | 20,229 5 5 |
| Currall, Lewis & Martin | 19,195 3 6 |
| Acme Wood Flooring Co., Ltd., London | 18,953 16 9 |
| E. Taylor, Blackpool | 18,291 18 5 |
| W. Griffiths & Co., Ltd., London | 18,245 17 3 |
| G. Freeman & Sons, Oldham | 18,200 9 3 |
| A. Faulkes, Loughborough | 17,622 14 6 |
| J. G. White & Co., London | 17,594 11 5 |
| R. W. Blackwell & Co.,* London | 16,892 11 7 |
| G. Law & Co.,† Kidderminster | 15,946 4 8 |

* Accepted. † Disqualified.

[Rest of Birmingham.]

**London, N.E.**—For the reconstruction of the temple at Congress Hall, Clapton, for the Salvation Army. Mr. Alex. Gordon, architect and surveyor, 97, Queen Victoria Street, London, E.C.:—

| | |
|---|---|
| Pollard & Brand, South Tottenham | £2,125 |
| Hawtry & Sons, London | 2,082 |
| Hailes & Son, London, S.W. | 2,057 |
| Lawrence & Son, London, E.C. | 2,030 |
| Castle & Son, London | 1,880 |
| Shurmur & Son, Upper Clapton | £1,647 |
| W. Silk & Son, Homerton | 1,595 |
| Sands & Palmer,* Walthamstow | 1,509 |

* Accepted.

**London, N.E.**—For the extension of training homes at the Salvation Army Congress Hall, Clapton. Mr. Alex. Gordon, architect and surveyor, 97, Queen Victoria Street, London, E.C.:—

| | |
|---|---|
| F. Orfeur, Brixton | £14,163 |
| Hailes & Son, London, S.W. | 13,652 |
| C. Castle & Son, Clapton | 13,273 |
| Lawrence & Son, London, E.C. | 13,010 |
| Thomerson & Son | 12,969 |
| Sands & Palmer, Walthamstow | 12,550 |
| Pollard & Bland, South Tottenham | 12,168 |
| F. J. Coxhead, Leytonstone | 11,7 7 |
| Shurmur & Sons, Clapton | 11,385 |

[Note.—Estimates reduced, and work divided between the two lowest firms.]

**London, S.E.**—For the erection of offices, &c., at the town hall, Spa Road, Bermondsey, for the Bermondsey Borough Council. Mr. R. J. Angel, borough surveyor:—

| | Alterations in basement. | Alterations to boundary wall and formation of new side entrance. |
|---|---|---|
| Holliday & Greenwood, Brixton | £2,248 | £239 0 |
| A. White & Co., Rotherhithe | 2,169 | 190 0 |
| Thomas & Edge, Woolwich | 2,150 | 200 0 |
| J. Smith & Sons, South Norwood | 2,109 | 235 0 |
| J. C. Chalkley, Bermondsey | 2,025 | 239 0 |
| R. E. Nightingale | 1,997 | 225 0 |
| J. Chessum & Sons, Bow | 1,996 | 218 0 |
| Killby & Gayford, London, E.C. | 1,950 | 230 0 |
| T. D. Leng, Deptford | 1,912 | 197 0 |
| H. Knight & Son, Tottenham | 1,893 | 186 0 |
| J. Ferguson & Co., Holborn | 1,880 | 220 0 |
| S. E. Moss & Co., Southend | 1,864 | 181 10 |
| G. Parker, Peckham | 1,850 | 209 0 |
| R. A. Lowe,* Lower Camden, Chislehurst | 1,799 | 220 15 |

* Accepted.

**Oxford.**—For the erection of a house at the corner of Windmill and London Roads, Headington, Oxford. Mr. Herbert Quinton, architect and surveyor, 22, George Street, Oxford:—

| | |
|---|---|
| Hutchins & Sons | £1,575 |
| Brucker Brothers | 1,550 |
| Wooldridge | 1,378 |
| Kingerlee & Sons | 1,247 |

**Sidbury (Salop).**—For the erection of a house, for the Rev. J. B. Clutterbuck. Messrs. Barrett & Driver, architects, 23, York Place, Baker Street, W.:—

| | |
|---|---|
| Willcock & Co. | £2,450 |
| Morris & Sons | 2,280 |
| Henry Smith | 2,144 |
| Estcourt & Sons,* Gloucester | 2,100 |

* Accepted provisionally.

**Stamford.**—For private street works on the Northfields Estate, for the Corporation of Stamford. Mr. T. W. A. Hayward, borough surveyor and engineer:—

| | |
|---|---|
| A. Jewell, Market Harborough | £1,565 0 0 |
| Bentley & Loch, Leicester | 1,504 15 10 |
| J. Woolston, Stamford | 1,397 0 0 |
| J. C. Trueman, Swanley, Kent | 1,239 0 0 |

[Borough surveyor's estimate, £1,200.]

**Stourbridge.**—For the erection of a workhouse. Mr. A. Marshall, architect, Nottingham:—

| | |
|---|---|
| C. A. Horton | £143,224 0 0 |
| W. Pattinson | 123,243 0 0 |
| J. Hutchinson | 112,400 0 0 |
| H. Dorse | 110,000 0 0 |
| W. H. Gibbs | 109,900 0 0 |
| Vickers & Co. | 109,815 17 5 |
| Guest & Son | 109,300 0 0 |
| Willcock & Co | 108,775 0 0 |
| Fish & Sons | 106,352 0 0 |
| W. Hopkins | 104,000 0 0 |
| Vickers & Son | 103,000 0 0 |
| Hadley & Son | 102,700 0 0 |
| Dallow & Son | 99,900 0 0 |
| Crane & Co. | 99,500 0 0 |
| Moss & Son | 97,885 0 0 |
| F. Evans,* Nottingham | 95,550 0 0 |

* Accepted.

**Stourbridge.**—For the erection of cottage homes. Mr. A. Marshall, architect, Nottingham:—

| | | | |
|---|---|---|---|
| C. A. Horton | £14,783 | W. Crane | £10,900 |
| W. Pattinson | 12,243 | W. H. Gibbs | 10,900 |
| Vickers | 12,170 | Guest & Son | 10,800 |
| Simmons | 12,000 | Dallow & Son | 10,550 |
| J. A. Meredith | 11,964 | Moss & Son | 10,456 |
| G. H. Marshall | 11,700 | Fish & Son | 10,356 |
| T. Hardy | 11,395 | Hadley & Son | 10,205 |
| H. Dorse | 11,150 | Griffiths,* Lye, Stourbridge | 10,180 |
| Hutchinson | 11,100 | F. Evans | 10,100 |
| W. North | 10,981 | W. Hopkins | 10,020 |
| Willcock & Co. | 10,970 | Vickers & Son | 9,800 |
| J. & A. Brazier | 10,900 | | |

* Accepted.

**Wem (Salop).**—For the erection of a new market house, assembly hall, &c., for the Wem Urban District Council. Mr. J. Brown, architect, 12, Castle Street, Shrewsbury:—

| | |
|---|---|
| G. Edge, Whitchurch | £4,670 |
| E. Whittingham, Newport | 4,450 |
| G. Dodd, Whitchurch | 3,902 |
| T. Jervis, Wem | 3,875 |
| Toomey & Co., Wem | 3,862 |
| J. Hayes, Shrewsbury | 3,800 |
| G. H. Bickerton, Shrewsbury | 3,775 |
| H. Price, Shrewsbury | 3,765 |
| R. Price & Sons, Shrewsbury | 3,700 |
| T. Pace, Shrewsbury | 3,667 |
| J. Gethin & Co., Shrewsbury | 3,647 |
| E. H. Nicholas, Shrewsbury | 3,632 |
| Treasure & Son, Shrewsbury | 3,619 |
| G. Bullock, Shrewsbury | 3,470 |
| T. Huxley, Malpas | 3,400 |
| T. Morris & Sons, Shrewsbury | 3,343 |
| G. Phillips,* High Street, Wem | 3,330 |

* Accepted.

**London, S.E.**—For the erection of buildings in connection with extensions to the dust-destructor house electric light station, boiler-house, &c., at the Council's works rear of the town hall, for the Bermondsey Borough Council:—

| | Main estimate. | Separate estimate for work to be completed in five weeks. | Special estimate in connection with engineering section, and forming part of engineering contract. |
|---|---|---|---|
| Hughes & Stirling | £6,850 0 | £1,350 10 0 | £1,955 0 |
| J. Chessum & Sons | 6,457 17 | 1,329 2 10 | 1,780 0 |
| Todd & Newman | 6,490 0 | 1,279 0 0 | 1,734 0 |
| R. A. Lowe | 6,490 0 | 1,189 0 0 | 1,700 10 |
| J. Ferguson & Co. | 6,390 0 | 1,263 0 0 | 1,819 0 |
| H. Knight & Son | 6,266 0 | 1,268 0 0 | 1,809 0 |
| B. E. Nightingale | 6,258 0 | 1,192 0 0 | 1,621 0 |
| Killby & Gayford | 6,230 0 | 1,240 0 0 | 1,686 0 |
| G. Parker | 6,230 0 | 1,150 0 0 | 1,620 0 |
| J. Smith & Son | 6,137 0 | 1,165 0 0 | 1,630 0 |
| T. D. Leng | 6,132 0 | 1,173 0 0 | 1,584 0 |
| S. E. Moss & Co. | 6,050 0 | 1,190 0 0 | 1,800 0 |
| Thomas & Edge | 6,199 0 | 837 0 0 | 1,660 0 |
| A. White & Co. | 5,646 0 | 1,156 0 0 | 1,561 0 |

* Accepted.

**Pontypridd.**—For new public offices in Morgan Street, Pontypridd, for the Urban District Council. Mr. Henry T. Hare, F.R.I.B.A., architect, 13, Hart Street, London, W.C.:—

| | | Additional cost of wainscot panelling, &c. | Additional cost of new channel, kerb, flagging, &c. |
|---|---|---|---|
| W. Davis, Pontypridd | £16,317 | £370 0 | £120 0 0 |
| D. Davis, Cardiff | 15,500 | 280 0 | 170 0 0 |
| Holloway Brothers, Ltd., London | 15,050 | 403 0 | 107 0 0 |
| E. Turner & Sons, Cardiff | 14,988 | 243 0 | 153 0 0 |
| A. S. Morgan & Co., Newport | 13,500 | 312 0 | 95 0 0 |
| Lattey & Co., Ltd., Cardiff | 13,372 | 446 0 | 132 15 6 |
| Hughes & Stirling, Liverpool | 12,960 | 320 0 | 90 0 0 |
| H. Willcock & Co., Wolverhampton | 12,950 | 410 0 | 174 0 0 |
| W. Williams,* Cardiff and Pontypridd | 12,490 | 200 0 | 110 0 0 |

* Accepted.

**Advertisement Aphorism for the Week.**

*From the seed of small beginnings by persistent advertising most of the successful business houses have grown.*

*Let your seed be planted in the* Builders' Journal, *and it will raise you customers.*

## Appointments Wanted.

*The charge for Advertisements under this heading is 1s. 6d. per insertion not exceeding four lines, and 6d. per line afterward, prepaid. Three insertions may be had for the price of two. Advertisements must reach the Office not later than 5 o'clock on Monday.*

ARCHITECT'S JUNIOR ASSISTANT desires re-engagement. Accurate draughtsman and tracer, working drawings, levelling, and surveying. Good references.—H. A., 2, Rosebery Terrace, Crouch End, N.

ARCHITECT'S JUNIOR ASSISTANT requires an engagement in the Midlands.—Apply Box 2580, Builders' Journal Office, 9, East Harding Street, Fetter Lane, E.C.

ARCHITECT'S ASSISTANT of 6 years' experience, with good references, desires engagement in good office. Salary 35s.—Architect, 43, Upper Gloucester Place, N.W.

ARCHITECTURAL ASSISTANT desires RE-ENGAGEMENT. Over five years' good and varied experience (three years' articles). Working drawings, details, surveying, &c.—Apply, S. C. A., 56, Great Freeman Street, Nottingham.

ARCHITECTURAL ASSISTANT desires SITUATION. 14 years' all-round experience. Working drawings, details, specifications, also hospital and asylum work. Good references.—C. T., 80, Mordaunt Road, Harlesden, N.W.

AS CLERK OF WORKS. Long varied experience in the trade. Structural Steel Work, Concrete, Brick, and Stone. Used to large works. Good testimonials, &c.—Box 2549, Builders' Journal Office, 9, East Harding Street, Fetter Lane, E.C.

BUILDERS' GENERAL FOREMAN seeks Re-engagement. Trade carpenter and joiner. Abstainer. London or Bristol preferred. Aged 36.—X. Y. Z., 62, Tubbs Road, Willesden Junction, London.

CLERK OF WORKS DISENGAGED.—Just finished large job in London. Aged 46. Abstainer. Thorough knowledge of all branches. Excellent testimonials from architects of repute.—W., 2, Shanklin Villas, Burlington Lane, Chiswick.

CLERK OF WORKS seeks RE-ENGAGEMENT. Just finished large job in London. Thoroughly practical. First-class references. Age 45. Town or country.—Address B. L., 81, High Street, West Norwood.

ENGINE DRIVER requires Berth. Can do all repairs. Has had seven years' workshop experience. Highest references.—C. B., 1, Petley Road, Hammersmith.

GENERAL FOREMAN, thoroughly practical, many years' experience, seeks re-engagement. Town or country. Trade, Carpenter. Aged 50.—D., 93, Abbotts Park Road, Leyton, N.E.

GOOD MASON wants Job. Abstainer. Good draughtsman. Capable of setting out. References.—Mason, Stone Works, Frinton-on-Sea, Essex.

MACHINIST or SAWYER wants JOB. All round hand. Sharpen saws, make cutters. Understand Gas Engine. Aged 31. Low wages.—A. Basson, c/o Howard, 1, Pancras Street, Tottenham Court Road, W.

PLUMBER and FITTER wants PIECE-WORK. Own plant. Good personal references from architect and builder finishing large job in West End.—Plumber, 114, Clifton Road, Norbiton.

STAIRS and RAILS.—Re-engagement wanted by a thorough practical Man, by the hour or piecework. Good references.—J. Dyer, 69, Bemerton Street, Copenhagen Street, N.

TRACINGS. First Class Tracer desires further evening work. Reliable. Seven years' experience. Terms, agreeable—moderate.—Write, R. Launcelot Sivyer, 20, Cowley Street, Westminster, S.W.

WORKING FOREMAN BRICKLAYER.—Varied experience. Good references as to workmanship, character, &c. Age 39.—Address, H., 6, Dorset Road, East Ham, Essex.

WORKING GENERAL FOREMAN seeks re-engagement. Thoroughly experienced in all branches; good references; town or country; trade, carpenter and joiner.—Address, J. B., 62, Davenport Road, Catford, S.E.

## Appointments Vacant.

*The charge for Advertisements under this heading is 1s. 6d. per insertion not exceeding four lines, and 6d. per line afterward, prepaid. Three insertions may be had for the price of two. Advertisements must reach the Office not later than 5 o'clock on Monday.*

JUNIOR CLERKS (with experience of builder's office). THE SCHOOL BOARD FOR LONDON are about to APPOINT YOUTHS to the LOCAL OFFICES of the CLERKS of WORKS for repairs in the following districts:—

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2. St. Clement's School, Notting Hill.
3. Townsend Street, Old Kent Road.
4. London Fields School, South Hackney.

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The salary will commence at 20s. per week, rising to 30s. per week by annual increments of 2s. 6d. per week, and the hours of attendance will be the same as those for the workmen.

Candidates will be required to have had some experience of the work of a builder's office, and to be able to pass an examination in shorthand.

Application should be made on a form, which can be obtained at the Works Department (Room 153), at the Head Offices of the Board, Victoria Embankment, W.C., and should be returned not later than 26th SEPTEMBER, 1903.

FOREMAN PAINTER WANTED. Used to very large jobs at cutting prices, railway stations, &c.—Apply, by letter, to W., 231, Park Lane, Tottenham.

OFFICE BOY Wanted, who can spell, write a good hand, and is expert at arithmetic.—Apply by letter, with testimonials, to 150, Harley Street, London, W.

SALESMAN.—Wanted a Smart Business Man possessing a knowledge of the requirements of the Building Trade in London, for Chimney-pieces, Stoves, and Kitchener Showrooms. Applicants must state by letter what experience they possess and salary required to the Managing Director, Young & Marten, Ltd., Stratford, London, E.

TO PARENTS AND GUARDIANS.—Quantity Surveyor desires Pupil to learn this lucrative business; five years' articles; premium 200 guineas. Pupil must reside with Principal and pay, in addition to premium, £2 weekly for board and residence. Solicitor's references exchanged.—Address, John Windsor, 75, Parkhurst Road, London, N.

TO TILEMAKERS.—Wanted, for British East Africa, a Good Tilemaker, with experience in brick and drain-pipe making. Must be in full sympathy with foreign mission work.—Apply, by letter only, with particulars as to age, experience, references, and salary required, to B. E. A., c/o Industrial Missions Aid Society, 17, Paternoster Row, London, E.C.

WOOD CARVER.—WANTED, a good MAN, accustomed to carving church figures and heads.—Apply, with specimens of work, to Gilbert Seale, 22, George Street, Camberwell Road, London.

WORKING FOREMAN BRICKLAYER. Wanted, Smart Man for job in S. London. Must be good manager of men in own trade, and thoroughly practical.—State age, experience, references, and wages to G. P., 8, Chesterton Road, Notting Hill, W.

## Businesses Wanted & For Sale.

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BUILDERS' BUSINESS.—Small Freehold Premises and Good Residence FOR SALE in healthy and growing country district. Plant, stock, &c., at valuation. A going concern.—"Surrey." Box 2587, Builders' Journal Office, 9, East Harding Street, Fetter Lane, London, E.C.

FOR DISPOSAL, as a going concern, through retirement of present proprietor, an old-established BUILDER and CONTRACTORS' BUSINESS, which has been in present hands over 40 years. Improving market town and railway centre, where houses are in demand and building trade is brisk. Reliable staff of workmen, convenient premises, and good connection. A fine opportunity for an energetic man who knows his business. No goodwill is asked. Stock and plant at valuation.—Apply to JOSEPH COLLINGWOOD, Business Transfer Agent, Exchange Buildings, March.

## Drawings, Tracings &c.

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DESIGNER FOR STAINED GLASS requires additional work. Quaint up-to-date treatment for leaded lights. Competition sketches prepared.—Address, Box 2572, Builders' Journal Office, 9, East Harding Street, Fetter Lane, E.C.

PERSPECTIVES by R.A. Exhibitor (colour or ink). Best style. Also temporary assistance to architects. Working drawings and design. Terms moderate.—C. R. Chidson, 13, Eardley Road, Streatham.

PERSPECTIVES EFFECTIVELY EXECUTED.—C. H. Simpson, Moor Oaks Lodge, Moor Oaks Road, Sheffield.

TO ARCHITECTS AND OTHERS.—Quantities prepared, also working, detail drawings, specifications, by Experienced Surveyor. Terms arranged.—E. Payson, c/o Housekeeper, 11, Great James Street, Bedford Row, W.C.

TO ARCHITECTS, BUILDERS, AND OTHERS.—Plans prepared at lowest charges; Tracings from 5s. Specifications, &c., accurately typewritten, 1s. per 1,000 words.—D. R. Mathison, 39a, Algernon Road, Hendon.

## THE BUILDERS' JOURNAL.

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| | | | | | | |
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| | | | | | | |

**After 4 LINES, 6d. per LINE.**

Write your "Want" Advertisement on this form and send it to 9, East Harding Street, E.C., with Postal Order for 3/-.

**NOTE.—5 o'clock p.m. Monday is the latest time for receiving "Want" Advertisements. Office: 9, East Harding Street, Fetter Lane, E.C.**

# Bankruptcies.

[Abbreviations: R.O.—receiving order; P.E.—public examination; C.C.—county court; O.R.—official receiver; Adj.—Adjudication.]

DURING THE WEEK ending Sept. 26th fourteen failures in the building and timber trades in England and Wales were gazetted.

H. W. JONES, builder, Aldenham. R.O. Sept. 11th and adj. Sept. 16th.

W. BAXENDALE, decorator and plumber, Leigh. R.O. and adj. Sept. 14th. P.E., Bolton C.C., Oct. 7th, at 3.

F. PARKER, builder and contractor, Spalding. R.O. Sept. 18th

F. J. E. HINE, wallpaper merchant, London, S.E. and W. R O. Sept. 18th.

W. O. LEESON, painter and decorator, Doncaster. R.O. and adj. Sept. 19th.

D. J. EVANS, builder, Aberystwith. R.O. and adj. Sept. 17th.

A. BOOK, builder, Colwyn Bay. P.E., Bangor Magistrates' Room, Oct. 1st, at 12.30.

C. T. WORSDALE, plumber, Hull. R.O. and adj. Sept 15th. First meeting, O.R.'s, Hull, Sept. 30th, at 11.30. P.E., Hull C.C., Oct. 19th, at 2.

W. E. KEYS, builder, Tooting. First meeting, 24, Railway Approach, London Bridge, Sept. 30th, at 12.30. P.E., Wandsworth C.C., Oct. 22nd, at 12.

CHARLES LATHAM & RALPH NORBURY (trading together as Lightbound, Rigby & Co. at 170, Regent Road, Liverpool, and at other addresses, timber merchants; and also as the Saginaw Lumber Co., of 8, Victoria Street, Liverpool). Liabilities £142,333, of which £78,761 is unsecured, and of this amount £67,897 is on account of Lightbound, Rigby & Co. and £10,864 on account of the separate business of the Saginaw Lumber Co. The creditors fully secured are £55,156, and the amount of securities held by them is estimated at £93,034. Partly secured creditors £5,966, and assets held by them £4,966, leaving a deficiency of £1,000. Total nett assets £80,143; a surplus over the nett liabilities of £1,382. The firm's difficulties appears to have been brought about by their purchase and development of a large building estate at Oakhill, Old Swan, Liverpool, into which from time to time all their available resources had been diverted.

# Coming Events.

**Thursday, October 1.**

BUILDERS' BENEVOLENT INSTITUTION.—Half-yearly General Meeting, Crown and Anchor Hotel, Ipswich, at 3 p.m.

**Friday, October 2.**

SANITARY INSTITUTE (Lectures and Demonstrations for Sanitary Officers, Part I.).—Mr. J. Priestley on "Duties of a Sanitary Inspector"—II., at 7 p.m.

ARCHITECTURAL ASSOCIATION.—Annual General Meeting. President's Address, Distribution of Prizes, at 7.30 p.m., by Henry T. Hare, F.R.I.B.A.

**Saturday, October 3.**

SANITARY INSTITUTE (Lectures and Demonstrations for Sanitary Officers, Part I.).—Inspection and Demonstration.

NORTHERN ARCHITECTURAL ASSOCIATION.—Visit to St. Chad's Church, Bensham, Gateshead-on-Tyne, at 3.30 p.m.

INSTITUTE OF SANITARY ENGINEERS.—Visit to Ealing Sewage Works, by permission of the Borough Engineer, Mr. C. Jones. M.I.C.E., at 3 p.m.

**Monday, October 5.**

LIVERPOOL ARCHITECTURAL SOCIETY.—First Ordinary Meeting at 13, Harrington Street, Liverpool, at 6 p.m. Opening Address by Mr. John Woolfall, F.R.I.B A., President.

**Tuesday, October 6.**

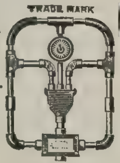
SANITARY INSTITUTE (Lectures and Demonstrations for Sanitary Officers, Part I.).—Mr. J. Priestley on "Duties of a Sanitary Inspector"—III., at 7 p.m.

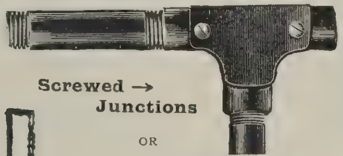
INSTITUTTE OF HEATING AND VENTILATING ENGINEERS.—Meeting at Holborn Restaurant, at 2.30 p.m.

**Wednesday, October 7.**

SANITARY INSTITUTE (Lectures and Demonstrations for Sanitary Officers, Part I.).—Inspection and Demonstration at L.C.C. Common Lodging House, Parker Street, Drury Lane, W.C., at 3 p.m.

UNIVERSITY COLLEGE, LONDON.—Inaugural lecture on "Architectural Evolution," at 5 p.m., by Prof. F. M. Simpson.





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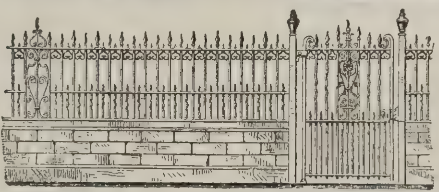

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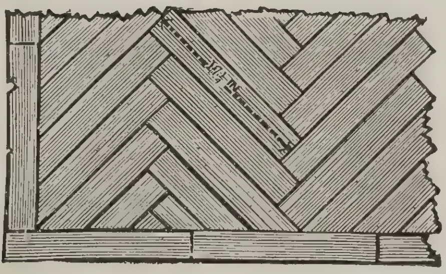
VULCAN HOUSE, 56, LUDGATE HILL. WORKS: FOREST HILL, S.E.



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The Board of Trade Journal.

*The Official Organ of the Board of Trade.* *Published Weekly, ONE PENNY.*

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# THE
# BUILDERS' JOURNAL
# AND ARCHITECTURAL RECORD.

October 7, 1903. Vol. 18, No. 452. 9, East Harding Street, E.C.

## Summary.

While Haddon Hall itself has been the subject of innumerable articles, the gardens have not received the attention they deserve. They are, as it were, an afterthought, but Nature has been allowed to run her course here and there, binding the Renaissance of the gardens and the Gothic of the house into one harmonious whole. (Page 128.)

In the first of a series of lectures at the Leicester Municipal School of Art, Prof. Beresford Pite traces the development of architecture. He holds that we cannot get away from certain proportions—those, too, laid down by Vitruvius; and if that were more generally recognized there would not be so many of the ghastly buildings which are the result of architects endeavouring to create their own proportions. (Page 132.)

In his presidential address to the Architectural Association Mr. Henry T. Hare said the leaven of the Gothic revival was still working and the wonderful Renaissance was only yet emerging from its shell. He referred also to the Architectural Museum at Westminster, which is to be the new home of the Association, and to the Day School, the first year's working of which has been most successful. (Page 133.)

The list of modern London buildings given this week includes several interesting hospitals in the N. district. (Page 135.)

Liverpool Cathedral is to be built of red sandstone. (Page 136.)

Four architects criticize, more or less caustically, the suggested new plans for dwelling-houses recently published in our columns; and the author replies. (Page 137.)

Prof. Simpson will deliver an address on "Architectural Evolution" at University College to-night. (Page xi.)

At the Leeds School of Art architectural courses are being held in preparation for the Institute examinations. Mr. Butler Wilson, in his inaugural address to the class of design, observed that a year or two spent in a school of architecture should enable a student to acquire at moderate cost the rudiments of his work before learning in an architect's office the practical details of his profession. He also made the significant remark that he knew of no building lately built wherein it was not sufficiently evident that neither architect nor builder had done his best. (Page 138.)

A very unusual enquiry on determining the thickness of plate-glass for windows to withstand wind-pressure and vibration from traffic brings out the fact that the problem has never been satisfactorily dealt with by mathematical theory. The method advocated is to proportion the shearing section (the marginal or bearing length multiplied by the thickness) so as not to exceed the safe tensile strength. (Page 139.)

**A Comedy that is gone.** Prof. Beresford Pite and Mr. J. S. Gibson are to be thanked for relieving last Friday's opening meeting of the Architectural Association of its dulness. So much was said that was commonplace, so much was said by the president which might more fitly have been read by the secretary, and withal there was such an abundance of wearisome congratulation, that the suggestive remarks of the very unorthodox professor and the playful humour of a Scotchman in London came as oases in a desert of words. Mr. Gibson was peculiarly happy in his reference to a comedy that is gone—the comedy of the Battle of the Styles, which was so clever, so full of fun, and provided such excellent entertainment for the bulk of the people. Possibly in the time to come the Architectural Association, always in the vanguard, may discover a comedy of its own which it may adopt as a policy of retaliation against the idea that architects are dull folk at best.

**The Suburbs.** In the minutes of the evidence taken by the Departmental Committee on Highways, published on Thursday last, we are glad to note that Mr. Rees Jeffreys draws attention to the careless inconsidered way in which the suburbs are allowed to expand. As a result of permitting inner London to grow as it has, the London County Council is committed to a capital expenditure of £15,000,000 for absolutely necessary road widenings and improvements. But in the suburban districts, through which all the inner traffic must pass to reach the country, building owners are allowed to build right up to the present inadequate main roads and to develop building estates with a maze of new streets as narrow as the laws permit, intersecting each other at awkward angles, and pouring their traffic into the already congested main roads. As an instance we need only take that big parallelogram of property at Fulham which is bounded by Lillie Road, Fulham Road, Fulham Palace Road and North End Road, and which has the districts of Hammersmith, Earls Court, Putney Bridge and Walham Green at the four corners. About 98 per cent. of the buildings on this area have been erected within the last thirty years and over 50 per cent. within the last ten. If any scheme had ever been prepared to which the building owners were required to conform, two fine thoroughfares could have been made crossing this area diagonally and linking up Hammersmith with Walham Green and Putney Bridge with Earls Court. Another district being very badly developed at present is Walthamstow, where, we might mention, a large number of houses have been erected by a councillor which, in direct defiance of the by-laws, have a space of only 8ft. 3in. between the back additions.

**Lambeth Palace Reparation.** The work of repairing the Norman and Lollards' Towers of Lambeth Palace, which is at present being undertaken, will occupy about six months. This is, fortunately, not owing to the damage being of vast extent, but to the fact that the work is of a nature that requires the exercise of great care, and as space on the parts of the parapets affected is somewhat limited it is not possible for more than two masons to work simultaneously. It has been found that the many smoke stacks in the neighbourhood are largely responsible for the fretting away of the brickwork, though, curiously enough, the portions now being replaced are not part of the original structure, but only date back about thirty years, when much the same process of restoration as is now being undertaken had to be gone through. On that occasion, however, ordinary bricks were used, whereas those which compose all the original parts of the palace, including the towers now under treatment, are of a somewhat peculiar shape, being about ½in. thinner than those used to-day and from 1½in. to 2in. longer. Bricks exactly like the old ones have been made for the present restoration.

**No More Book Schools.** Book schools belong to the last century; practice schools to the present. By this, of course, we do not mean that books occupy a subordinate place, but that they are being rapidly supplemented by workshop and office practice. The architect's education now is not compassed by any book, even though it be of Orders, holy or unholy. Occasions increase when he puts the book aside and goes among the workmen to study how stone is handled, mortar made, lead worked, bricks laid, windows fitted or girders put into a building; or he may himself become a workman and get blisters on his architectural hands or paint or putty on his architectural trousers. But blisters heal and trousers have to be spoiled at some time; whereas the architect finds himself practically acquainted with the materials he employs and consequently respects them. We need only call to mind the scores of technical schools throughout the country and the visits to buildings in progress which it is now customary for architectural societies to pay, in order to emphasize the fact; while a day school like that of the Architectural Association, which is practically an office, provides the most admirable preparatory training, even though no 5 per cent. commission is ever seen there. We notice the

National Association of Master House Painters and Decorators intends to establish a school of painting in Manchester; and we wish them every success. It will be a school for perfecting students in actual work rather than a school of design, and the aim will be to teach facility of expression with the brush in working out full-sized decorations. The school will appeal to a master-painter who wants to give his son an opportunity of improving himself in certain directions; it will be a real working school, starting at 8 or 8.30 in the morning and going on until 5.30 on five days of the week, and until 1 or 1.30 on Saturdays. The student will get a good workshop training, and will probably derive more benefit in six months than he would by two years' attendance at an art school.

## THE GARDENS AT HADDON HALL.

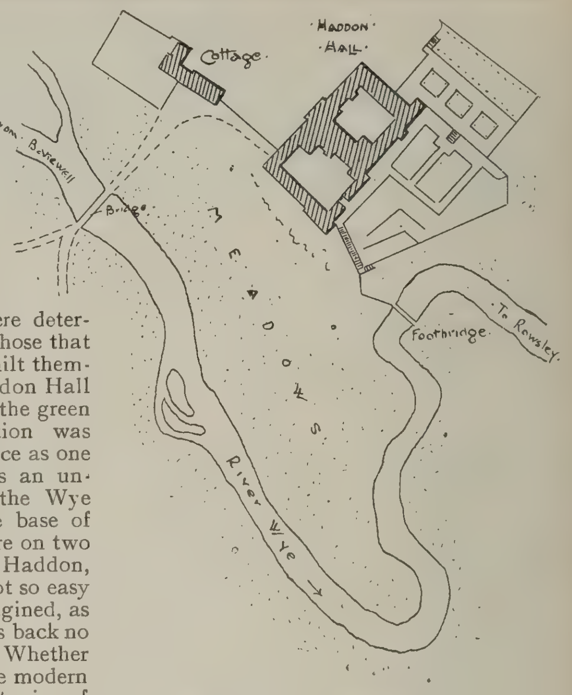
### By F. H. CHEETHAM.

THOUGH Haddon Hall is perhaps better known to students than any other of the old baronial houses of England, comparatively little attention has been paid to its gardens. Yet they are of exceptional interest, and deserve far more attention than they usually receive.

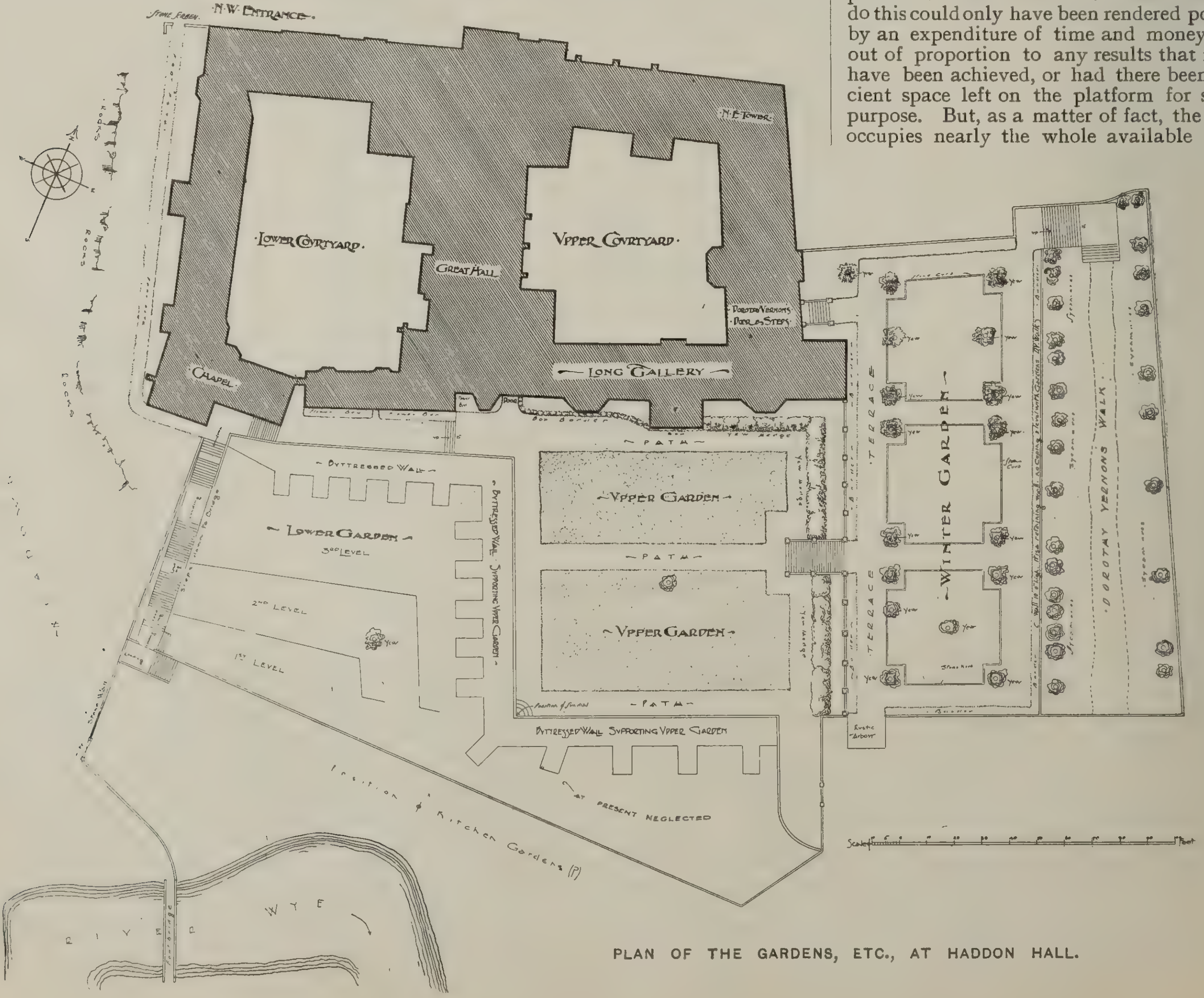
Haddon Hall itself is the result of something like five centuries of building, and was erected on no premeditated plan. One of the principal charms of the house is its irregularity and spontaneousness, yet the irregularity is not really so marked as in the majority of mediæval buildings. It is perhaps the more noticeable at Haddon as the later building operations took place in Elizabethan times, when regularity and symmetry were becoming the predominant features of English house design.

In considering the gardens at Haddon Hall, therefore, we must take into consideration that they are, as it were, an afterthought. The site and plan of the house were determined by quite other causes than those that operated in later days when men built themselves lordly pleasure houses. Haddon Hall is built on a rock jutting out from the green slope of a hillside. The position was obviously chosen in the first instance as one of defence. The house commands an uninterrupted view up and down the Wye valley. The river flows round the base of the rock, making the position secure on two sides. What was the appearance of Haddon, however, in the Middle Ages it is not so easy to say, as at first sight might be imagined, as so much of the present building dates back no further than the sixteenth century. Whether or not there were any gardens in the modern sense of the word before that date is, of course, extremely doubtful.

The plan of Haddon Hall as completed at the end of the sixteenth century is that of a house built round two rectangular courtyards, the whole forming a parallelogram about 250ft. in length by 150ft. in width. The longer sides face north and south, the shorter east and west. The hillside falls from east to west, and the rocky platform on which the house stands has also a slighter fall in the same direction. The long north and south fronts of the Hall have therefore to follow in some measure the fall of the ground, with the result that the house seems to literally step down the hillside. Picturesque as this undoubtedly is, it will at once be seen that such a disposition of the building almost precludes the usual lay-out of the grounds on the lines of a terrace running parallel with the main front of the house. To do this could only have been rendered possible by an expenditure of time and money quite out of proportion to any results that might have been achieved, or had there been sufficient space left on the platform for such a purpose. But, as a matter of fact, the house occupies nearly the whole available space,



KEY PLAN OF HADDON HALL.



PLAN OF THE GARDENS, ETC., AT HADDON HALL.

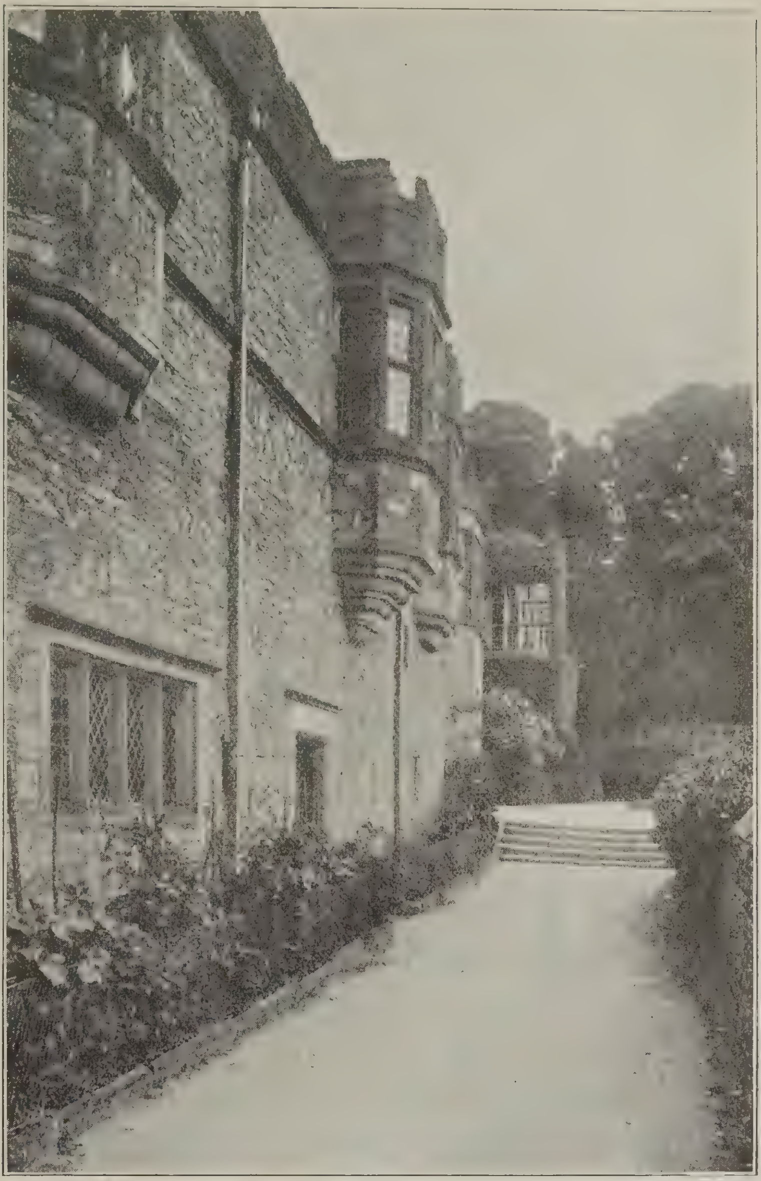
and the gardens are therefore of very small extent.

The long gallery was in course of erection at the time of Sir George Vernon's death in 1567, and was completed by his son-in-law and successor, Sir John Manners. It seems to have been in this latter's time that the buildings at Haddon were completed in the form we see them to-day, though, of course, some interior alterations were of subsequent date. Whether, however, the gardens were wholly the work of Sir John Manners is not quite so clear. The probability is that they were. It has been suggested that the main lines were laid down by Sir George Vernon; but this does not seem likely. The gardens are distinctly formal in character, or were so at the time of their formation, and show all that spirit of the new Renaissance art that is so noticeable in the work of Sir John Manners and his successors inside the house, and which is entirely absent from the work of Sir George Vernon, who, although living well into Queen Elizabeth's reign, seems to have preserved all the qualities of a much earlier age.

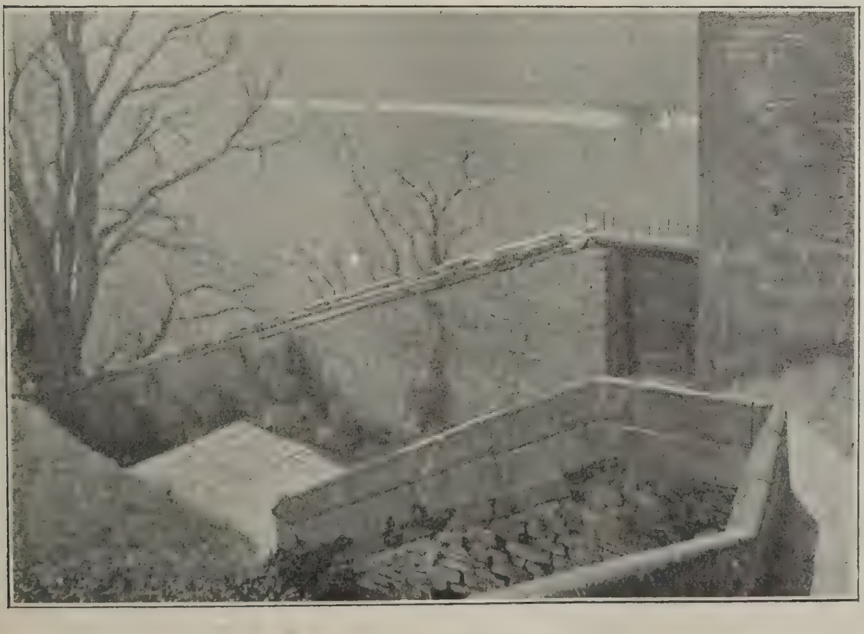
"I cannot refrain from noting," wrote Mr. Henry Duesbury about fifty years ago in a learned paper on Haddon Hall, "the extreme artistic skill with which the irregularities of the ground are made use of and the gardens are laid out. They consist of bold lines and terraces, which harmonize with, carry out, and add dignity to, the lines of the building, and, as home gardens always should, they form an integral portion of the design."

What, indeed, might have seemed to be an insuperable obstacle to a successful garden design has been made to contribute to a result that can only be pronounced as entirely happy. The irregularity of the ground is entirely responsible for the position of the terrace running at right angles to, rather than parallel with, the principal façade of the house. Yet who amongst the thousands that have visited Haddon would wish it otherwise than it is? The fall of the hillside was taken advantage of to form the gardens in a succession of four different levels on the south and south-east sides of the house, the space they occupy being determined on the south and west sides by the extent of the natural platform on which the house is built.

The larger plan on the opposite page shows the general disposition of the lay-out. There is first what is known as Dorothy Vernon's Walk, or The Rookery, a broad avenue nearly 200ft. in length and averaging 48ft. in width, planted with a double row of lofty sycamore trees, and forming a kind of upper terrace. "In early spring the pathway and banks on either side of this avenue are a magnificent carpet of aconites, and when in full bloom the effect is gorgeous." This upper walk, which is not very well known to visitors, is reached by a flight of fifteen steps from nearly opposite "Dorothy Vernon's Door."

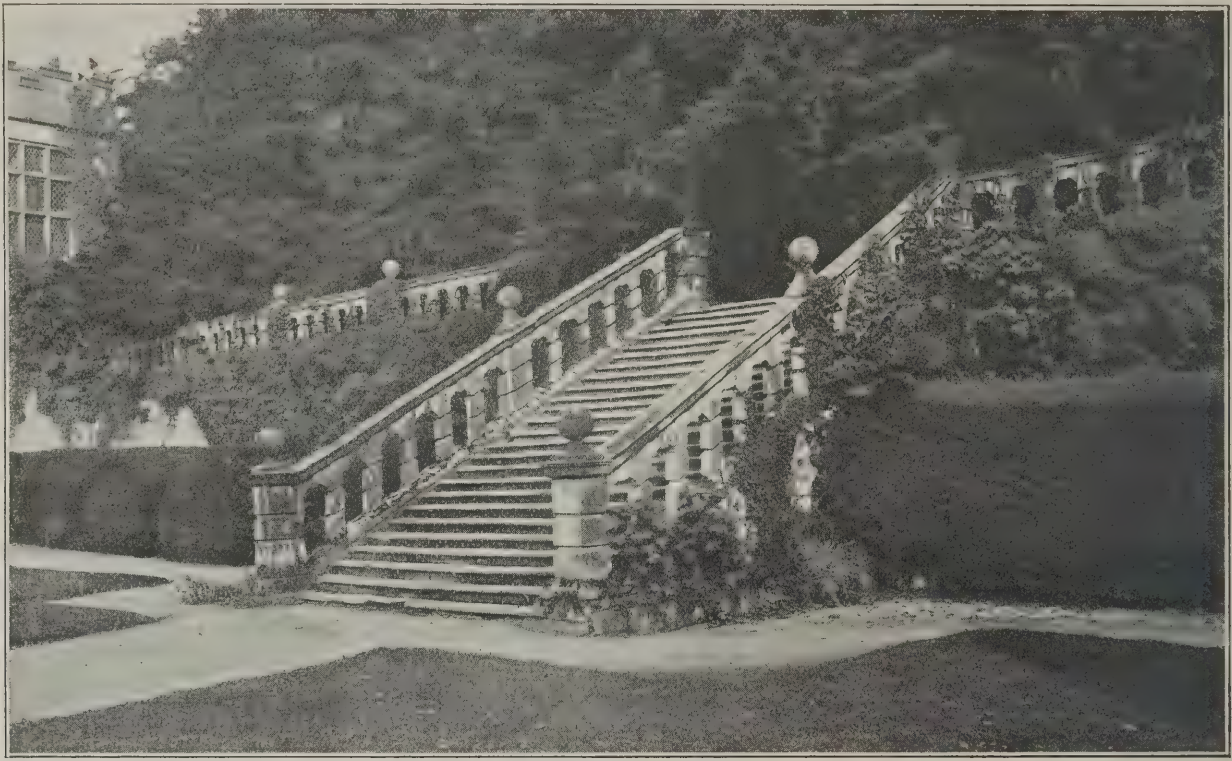


VIEW FROM THE TOP OF THE SEVENTY STEPS NEAR THE CHAPEL, LOOKING TOWARDS THE TERRACE.



TOP OF THE SEVENTY STEPS LEADING DOWN TO THE FOOTBRIDGE.

On the next level, about 10ft. below, is what is termed the Winter Garden, in which one finds oneself on leaving the Hall. The Winter Garden is divided into three parterres enclosed by stone curbs with yew trees in the angles. "These were once clipped," says Mr. Reginald Blomfield, "but are now grown into great trees overshadowing the entire terrace." Nothing, however, could be finer than the effect produced by the trees as they stand at present, with the lofty mass of the sycamores of Dorothy Vernon's Walk behind. The Winter Garden is of nearly the same length as Dorothy Vernon's Walk, and is 76ft. in width. Part of it extends along the eastern side of the house, to one of the rooms of which there is an entrance by a flight of steps through the opening known as Dorothy Vernon's Doorway, from the popular tradition that through it the young lady passed



THE TERRACE STEPS, HADDON HALL.

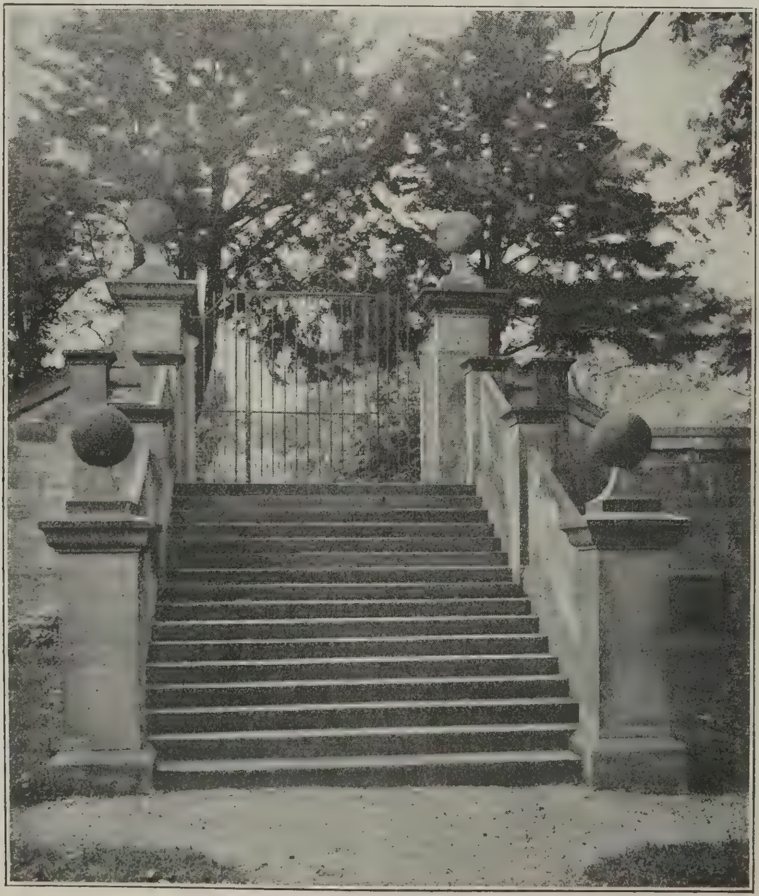
when she eloped with her lover. The door is, of course, of later date than the event. A bowling-green seems to have originally occupied the site of the Winter Garden, or some portion of it, and in the steward's accounts kept at Haddon Hall there are various items of sums paid for work in or about this part of the grounds as late as 1650. King, a hundred and thirty years later, towards the end of the eighteenth century, mentions a sort of small bowling-green upon one of the "terasses" of the garden.

The Winter Garden is separated from the garden below by the well-known Terrace balustrade. The Terrace runs at right angles to the house, and from it the finest view of the south front of Haddon is obtained. The balustrade itself, which is 125ft. in length, starts from the south-east angle of the Long Gallery and flush with its eastern wall. There are five bays, or compartments, at each side of the steps, with six small stone arches to each bay. The piers are surmounted by balls and are 11ft. 6in. from centre to centre. The height is 3ft. "The Terrace at Haddon," says Mr. J. A. Gotch, "is as good an example as can be found of the fine effect of a raised walk approached by a broad flight of steps, and protected by an arcaded balustrade. The detail is quite simple, there is no particular effect visible, everything seems to be there because it is wanted, but the whole effect is extremely picturesque."

From the Terrace a broad flight of twenty-six steps leads down to what is known as the Upper Garden. This is the principal garden of the house, and extends along the greater part of its south front. It measures 126ft. by 121ft., but by the disposition of hedges and flower beds has the appearance of an exact square. Its eastern side is bounded by the Terrace wall and steps, while on the south and west it is built up from the hillside by sturdily buttressed walls. This garden is laid out as a lawn, with a broad gravel path running round it and up its centre. On two sides are hedges of box and yew, and in the south-west corner are the remains of an old sundial on the angle of the wall. The difference of level between the upper and winter gardens is 10ft.

From the north-west corner of the upper garden a gravelled path leads by the side of the building to the top of a flight of more than seventy steps to one's left, descending to the old footbridge over the river. Between these steps and the upper garden is the Lower Garden, roughly terraced down the hillside from north to south in three levels. This garden is now in a very wild state, having apparently little attention paid to it. The old kitchen gardens were below this again by the side of the river, which here bends round the rock on which Haddon Hall is built.

The steps to the bridge are laid out in seven entire flights, the different levels of the lower garden being entered from the landings. From this point the nature of the difficulties that had to be overcome in laying-



ENTRANCE TO BOWLING-GREEN.

TERRACE WALK (WINTER GARDEN).

out the grounds at Haddon are perhaps best noted, the huge buttressed walls which support the platform of the upper garden being strikingly prominent. Nature has clothed this sturdy masonry with a wonderful growth of vegetation, making of it a veritable wall garden.

The Seventy Steps form the boundary of the gardens proper. The west side of the house rises sheer from the limestone platform and is open to the meadows below. Whether this was always so is an open question. There is a narrow path round the building on this side from the top of the steps, which brings one to the main entrance at the north-west angle of the house. Here there is a stone screen built by Sir George Vernon, the doorway in which, it may be assumed, gave access to a path round this side of the house, leading very likely, as at present, to some kind of a garden occupying much of the site of the present one. The return wall of this screen is broken off quite close to the doorway, but was probably originally carried along the west side of the house. Everything points to the assumption that there was a communication with the grounds on the south side of the house from the north-west entrance without going through the house itself. The chief entrance to the gardens as they were planned by Sir John Manners seems to have been from the park (now the meadows), over the little footbridge, and up the long flight of steps before-mentioned. The view of the house from the meadows near this bridge is very striking and picturesque, and comparatively little known. There are two ways into the gardens from the house—one by Dorothy Vernon's Door on to the Terrace, and the other by a passage at the end of the dining-room which gives access to the upper garden.

The views from the upper garden and terrace down the Wye valley are inexpressibly lovely, and cause us to wonder at the words of Bishop Kennet, who wrote, in 1707, that the house had "no manner of prospect, no walks or gardens." True, the gardens are not extensive, and from an eighteenth-century formalist's point of view the bishop's words may have some justification. To-day, however, we feel the gardens at Haddon to be in exquisite harmony with the house itself. They are formal without being too formal. Nature has been allowed to run her course here and there, notably in the growth of the great yew trees on the Terrace, and this gives just the true note of sympathy that binds the Renaissance of the gardens and the Gothic of the house into one harmonious whole.

HADDON HALL FROM THE MEADOWS, SHOWING ANGLE OF BUTTRESSED WALLS TO UPPER GARDEN.

DOROTHY VERNON'S STEPS.

In the seventeenth century Haddon Hall was surrounded by a park of considerable extent, enclosed with wooden pales, but Edward King, writing in 1782, mentions this park as having been destroyed and the land ploughed up "within these twelve years."

That the words of Bishop Kennet must not be taken too literally is evident from the fact that Dr. Leigh, the natural historian of Lancashire, Cheshire and the Peak, writing but a few years earlier, mentions Haddon as "a stately building, with noble gardens," which is probably the truer description.

A bowling-green was afterwards erected on the hillside above the house, occupying an acre of ground. The approach to it is by an avenue of lofty trees, which lead to a flight of sixteen steps, with a balustraded wall on each side. On the north side is a lodge or summer house (now used as a dwelling) with the date 1696. The "green" is converted into a garden, and the entrance gateway and walls have been recently restored. This old bowling-green no doubt took the place of that on the Terrace, and is spoken of by Edward King as "supported by walls built round it, like a sort of hanging garden." It is some distance from the Hall, and is consequently seen by few visitors.

# THE DEVELOPMENT OF ARCHITECTURE.

By Prof. **BERESFORD PITE.**

On September 25th Prof. Beresford Pite delivered the first of a series of lectures on architecture at the Leicester Municipal School of Art. He said it would be his endeavour to induce the students to think for themselves, apart from the teaching of the architectural picture-books. Architecture did not lie in a study of form any more than good poetry lay in a study of words. Every building embodied the thought of those who built it; the arrangement of a building denoted its purpose. It was obvious, therefore, that the forms those arrangements took denoted the intelligent condition of the persons who gave the forms being. He had the advantage in working at South Kensington that his students knew nothing about architecture. They came with open minds, and they did not sit down and say at once that there was only one form they liked; that they hated everything which was red and liked everything which was green. He was delivered from all that at South Kensington, and he hoped with regard to this work that the students would begin without prejudice, and think for themselves.

Let them dismiss from their minds all prejudices as to style, and see if they could not learn something from each particular style. Their programme was to consider the whole subject of architectural development, with a view to understanding how to develop our architecture. He was going, therefore, to very briefly review the development of style.

The progress of architectural development was the progress of the knowledge of building art. Architecture was the art of building reasonably, sensibly and beautifully. It was not that sort of application of art to the outside of a building which the man in the street thought was architecture.

The progress of building art had been a simple process of evolution. With regard to Egyptian architecture, for instance, Professor Petrie held the theory that the well-known Egyptian style was a development from the rush and mud huts of the Upper Nile. It was a copying in fine material of the forms of the erections in commoner material. It of course augured a want of intellect, but the forms survived. The Grecian styles were more beautiful, but were the Greeks more intellectual? Not a bit. Vitruvius, who flourished in the reign of the Roman Emperor Augustus, wrote a treatise on the laws of architecture, and said the proportions of the Doric style were based upon manly proportions. A man's height was six times the length of his foot, &c., and the Doric column was six times its diameter. The Ionic column was seven times its diameter, because it was based upon feminine proportions, and so on. Greek architecture was a translation into fine material of the forms which arose from the employment of wood in building. The architectural development of the Greeks had left its impress on the whole world.

Then they came to the Romans. They originated nothing. They were great builders and engineers, and they used Greek art to decorate their great works. They had an art repository in Greece. Then the Roman Empire fell to pieces, and they came to the Byzantine Empire. The barbaric forms of their architecture were a blend of what had gone before. At the close of the Roman Empire the whole of society was in the melting pot, and when it came out there was little distinction between the architectural and the constructive man.

Then came the great Christian era, so that the great buildings of the Middle Ages were ecclesiastical. The Roman Church practically replaced the Roman Empire, and exercised a world-wide influence for good in architectural education. Then came those great domed buildings which were so impressive and beautiful. The question might here be asked whether architecture could get on without artists. In his opinion it could not. Imagination was as necessary in designing beautiful churches as in anything else. They could not design out of limbo, and imagination must have material from which to work.

Now they came to England. England, in the absence of means of communication, was cut off from Greece and Rome. Our only connection was through the Church, and we saw, therefore, the establishment of Italian ideas through the influence of Italian bishops and priests, and through the pilgrims. Building energy developed largely in England after the time of Canute. Previously churches were built of wood, but afterwards stone was used, and craftsmen worked with common-sense, and developed the few ideas that had been brought from Italy. Whatever views they held to-day as to proportion in design, they would find that they could not get away from certain proportions, and the proportions, too, that Vitruvius laid down. They would find that there was a certain mean that was satisfactory, and they could not get beyond it. Why it was so he could not say, but he urged on students that there certainly was a canon of proportion. If that were more generally recognized there would not be so many of the ghastly buildings which were the result of architects endeavouring to create their own proportions.

# Obituary.

**Mr. Edward Johnson**, joiner and builder, of Ripon, died recently at the age of seventy-eight years.

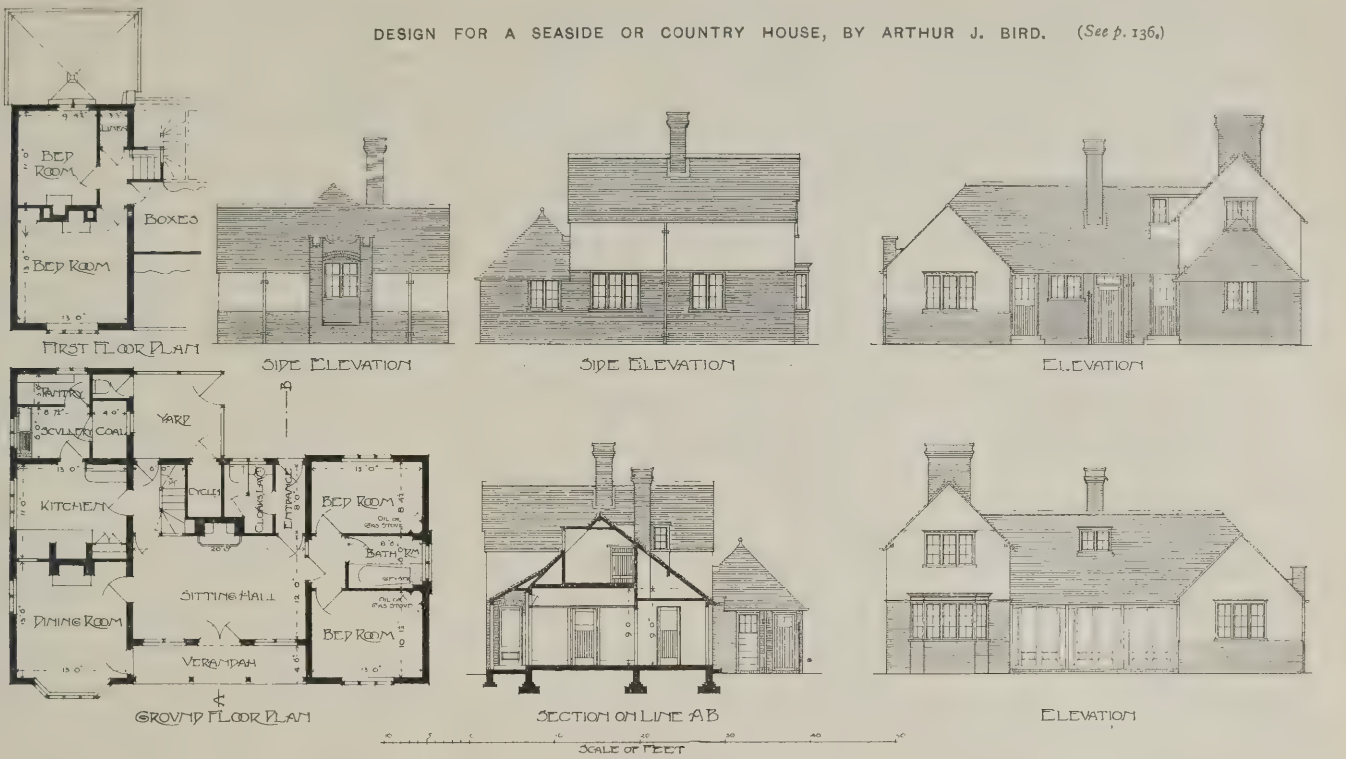
**Alderman John Hardaker**, builder and contractor of Bradford, who died on August 24th last, left estate which has been valued at £11,183 gross.

**Mr. Charles Gordon**, builder, of Arbroath, died recently at the age of eighty-two years. While young, he emigrated to Melbourne and made money in the Ballarat goldfields. Returning to Arbroath in 1860, Mr. Gordon entered into partnership with Mr. Alexander Ramsay, the firm being then, as now, known as Ramsay & Gordon, builders.

**Mr. Walter Dickson,** one of the best-known architects in New York State, died in Brooklyn recently at the age of sixty-eight. Mr. Dickson was for many years established in Albany, where he executed many important commissions and gained the highest esteem of the profession and the public. He was the architect of the Albany Post-office and the Albany City Prison, among other public buildings. He removed to Brooklyn about fifteen years ago, and formed a partnership with Mr. Withers. The firm of Withers & Dickson carried out much important work, and gained a certain public prominence through their courageous struggle against Tammany methods in the matter of the Tombs prison, which they designed, and should have carried to completion.

THE GARDEN SCREEN, HADDON HALL.

DESIGN FOR A SEASIDE OR COUNTRY HOUSE, BY ARTHUR J. BIRD. (*See p.* 136.)



## ARCHITECTURAL ASSOCIATION.

### Opening of the New Session.

THE Architectural Association held its opening meeting of the session on Friday evening at 9, Conduit Street, W., when Henry T. Hare, F.R.I.B.A., the president, occupied the chair.

Mr. Arthur Keen and Mr. Sudsuki were elected members. Mr. Sudsuki has been sent by the Japanese Government to study architectural education in Europe and America. His tour will last about four years.

Mr. L. Sage, Mr. C. Granville Baker and Mr. W. J. Waghorne were re-instated as members, and the following additional donations to the New Premises Fund were announced :—£25 each, W. D. Caröe and Clyde Young ; £10 10s. each, W. Campbell Jones, J. Douglass Mathews, A. N. Prentice and G. Sherrin (second donation) ; £10, W. H. Bidlake ; £5 5s. each, T. W. Aldwinckle, E. R. Barrow, F. T. W. Goldsmith, Lacy W. Ridge, H. W. Stock and W. J. Waghorne ; £5, Felix Clay ; £4 4s., E. Greenop and Somers Clarke ; £2 2s., anon., F. G. Allsopp, R. E. Crossland (2nd donation), W. Curtis Green and Arthur Keen ; £2, Halsey Ricardo ; £1 1s., J. H. Cooper, W. H. Knowles, W. J. M. Thomasson and Butler Wilson.

It was announced that at the next meeting Mr. Louis Ambler would be proposed as hon. secretary in place of Mr. Maule (who is now headmaster of the Day School, since Mr. Bolton's retirement) and Mr. G. B. Carvill as a member of the Committee. A vote of thanks was then passed to the Bath Stone Firms and to Mr. Mowbray A. Green for arranging the Association's visit to Bath and for their hospitality, after which the prizes were delivered to the successful students. The president then gave his inaugural address. After referring to the new home being prepared for them at the Royal Architectural Museum, Tufton Street, Westminster, into which the Association will move at the end of next March, Mr. Hare said :—

It is the fashion, in looking back on the Gothic revival, to speak slightingly of the enthusiasm which possessed its leaders, or to regard that enthusiasm as worthy of a better object. The direct effect, however, is with us to-day in our emancipation from the artistic paralysis of the first half of the last century. The leaven is still working, with full and perhaps increasing potency, and the wonderful renaissance is yet only emerging from its shell, and there is promise of such glorious developments as may perhaps eclipse the greatest triumphs of the past.

Beneath the apparent desolation of the museum was a latent vigour, based upon our indigenous architectural traditions, destined to successfully receive the graftings of such a vigorous constitution as that of the Architectural Association, whereby to renew its strength and with regenerated powers to influence for lasting good our noble profession.

This sketch, I venture to think, is not overdrawn, and while we are accepting new responsibilities, we are also investing ourselves with a heritage in delightful associations and replete with potent possibilities.

The interests centred at Tufton Street are one thing, the collections are another, and without going further into that it may be said that the study and contemplation of the contents of the museum and of the cognate studies there represented have had no small part in the great renaissance to which I have just referred.

### Men of the Gothic Past.

It will be impossible to adequately refer to the long roll of honourable names linked with the history of the museum, but I cannot refrain from reminding you that among those in the past have been H.R.H. the late Prince Consort, Earl de Grey, Ruskin, Donaldson, Sir Charles Barry, Beresford Hope, Scott, Cockerell, Penrose, Pearson, Brandon, and a host of others ; while in the living present we have Mr. John P. Seddon, Mr. Aston Webb, Sir William Emerson and Mr. Maurice B. Adams, who for so many years has acted as honorary secretary and through whose enthusiastic interest the idea of fusion has been translated into a reality.

We see to-day noble blocks of Government buildings rising in Whitehall, which strangely seem to recall to memory the hot controversies and battle-cries of the styles which raged when the Foreign Office designs were prepared by Sir Gilbert Scott in a manner alien to his sympathies. In all of this, no doubt, Tufton Street exercised a not unimportant influence. Scott is generally supposed to have vindicated in St. Pancras Station what he would have done in Whitehall had he been so permitted by the powers that then were. Time, however, has its revenges, and it is not a little entertaining to read an antique couplet that

> Scott's windows may give us abundance of light,
> But 'tis clear that Scott's windows will never fit TITE.

In those days the museum was a centre of light and leading, and I trust that it may still be in a more extended way a factor to be reckoned with in the architectural movements and interests of the day.

The past year has not only been significant and epoch-making by what may be designated as the great departure, but it has been rendered notable by the successful completion of the first year's working of

### The Day School.

This is a matter for sincere congratulation, and this fact is important enough in itself to have taken precedence of everything else. However, these two events have come together side by side ; the school demonstrating beyond all dispute the inadequacy of our present premises. This climax may well encourage us in the highest anticipations for the future progress of our Society under the more favourable conditions which we shall enjoy in our new home.

After two years of ungrudging labour Mr. Arthur Bolton has, greatly to everyone's regret, relinquished the post of headmaster of the day school, which he has filled with unqualified distinction, and the success which has attended the school is doubtless due in a very large measure to his devotion. To undertake a mastership is one thing, to organise and originate is another. Mr. Bolton has done both. Our ideal has been to give definite and systematic instruction by a one year's course of training preliminary to office work, and, when desired, to supplement this by a second year's course of more advanced study. This instruction is partly intended to enable the student to gauge his capacity before life is too far advanced, and to test his inclination for entering the profession. The latter consideration need not be present, but had it been possible for many now alas ! in practice, perhaps some careers would have been happier and architectural repute more unsullied.

The instruction which our day students

receive at the hands of the master and his assistants is based on principles which are intended to enable an intelligent interest to be taken in what they will see going on around them when they enter an office, and to assist them to assimilate the knowledge which will be at their disposal if they can but seize their opportunities.

To fill the vacant mastership has been a difficult and anxious duty. I am certain that the selection of Mr. Maule has the full approval of the Association. The responsibilities of the post are by no means light, and whatever the new master's opinion of his own fitness may be, all will agree that no better choice could have been made.

Before leaving these two topics I have

### Two Appeals

to make. First in regard to the day school, I take this public opportunity of commending it to the consideration of parents, guardians and heads of public schools as affording an excellent means of testing the aptitude of the coming man for his future profession. Should experience show within twelve months that he is unsuited for the calling of an architect, he will have been no loser thereby, but will have gained much information useful in other walks of life, and will have been spared the drudgery of an uncongenial occupation.

The other appeal I have to make is to a wider audience than that represented within this room. I refer to the building fund, which still requires to be largely augmented before we can hope to be free from debt. The work on which we are embarked at Tufton Street is one which is in the interests of every member of our profession; indeed, I do not think I am guilty of exaggeration if I say that it is of national importance.

In every other great country it would be undertaken or heavily subsidized by the responsible Government; here, however, it is left to private effort, and the greater need there is therefore for every member of the Association and the profession at large to afford the utmost support which their means will allow.

The Association numbers nearly 1,500 members, and one might reasonably expect that each one of these would contribute to an object which is so much in their interest. Up to the present time, however (although we have to thank many generous donors), less than one quarter of our members have responded to the appeal. I feel that some great effort should be made to bring the general body into line, and I here invite every member to follow the example already set by your committee, by doubling the amount of his yearly subscription for this session only. This should be within the means of all, and produce a community of interest which would be for the good of all.

The provincial societies have also an interest in this matter, and very welcome have been the contributions sent by some. I commend the good work heartily to the others, and indeed to all persons interested in the progress and advancement of architecture (and who should not be?) as a national British art, and ask them to show their practical sympathy by coming forward to assist us to complete the provision of the large sum necessary for the adaptation and enlargement of the Royal Architectural Museum to the purposes of the Association.

### The Collection of Casts.

We have had to undertake certain financial responsibilities relative to and contingent on the acquisition of the property and its extension, while in addition to this there will be considerable outlay in the rearrangement and exhibition of the valuable collection of casts, which will be open free to the public as heretofore. In regard to the latter we hope to make the collection as far as possible representative, chronological and useful in every way to students at large.

Death is ever too busy about us, and today we have to lament the loss of some valued colleagues whose sympathy and counsel have helped us in the past. The late Mr. F. C. Penrose was associated with the early days of the excursion under Edmund Sharpe. We also deplore the loss of Professor Roger Smith, twice president of the Association, ever its kind adviser, and the friend and learned instructor of all young men brought under his helpful influence.

### Architectural Study.

In drawing to a conclusion, I have a few reflections which I wish to offer to our student members. I might again advise the enthusiastic pursuit of the study and delineation of ancient buildings, or the fruitful results that await the diligent student of architectural literature, without enlarging on either, which I have done before. I would again heartily commend both to you. What I want to do is to venture to suggest the deliberate consideration of such studies as are the outcome of demonstration and experience, observation and research, rather than the perusal of books and the abstract theories of mankind. Sir Norman Lockyer, in his illuminating address before the British Association, made this pregnant statement, "From neglect of research comes imperfect education and a small output of new applications and new knowledge to reinvigorate our industries."

### Brains Wanted.

Last year I made more than a passing reference to the necessity of brains in the active evolution of architecture, and perhaps the younger members will pardon me if I beg them to read what I then said in connection with what I have to say now. It seems to me that much of the deplorable wickedness which we unfortunately see abounding in the thoroughfares of our cities and towns is the result of (to put it in better words than mine) "old rule-of-thumb processes, which are preferred to new developments"—a conservatism too often resulting from the master's own lack of knowledge. This may seem a hard saying, but it should be our object, as much as lies within our circumscribed and limited powers, to develop and foster the abilities with which we are all more or less endowed. It is no crime to be young, and all possibilities lie with youth, so that in a way it may be said that to be young is to be successful.

To secure our well-being as a profession it is highly important to see to our organization and equipment, the consideration of which is to us personally as important as the provision of "battleships and big battalions." It is brains therefore that we want, fortified by the experience and research of others, and the practical personal study of the design and execution of modern work by modern masters, reinforced by the rich heritage of art which has come down to us

It has been recently said, "It is a great thing to learn to use other people's experience, and to get it first hand, not trusting entirely to books. Knowledge obtained from men is the most mentally nourishing and the most easily assimilated." What I would leave with you is the picture sketched by Robert Browning:—

> "Here, work enough to watch
> The master's work, and catch
> Hints of the proper craft, tricks of the tool's true play."

The vote of thanks to the president was proposed by Mr. G. H. Fellowes Prynne and seconded by Mr. J. S. Gibson. The Japanese Minister, Viscount Hayaski, in supporting the vote, incidentally referred to the difficulties which architects in Japan experienced on account of earthquakes. He also took occasion to contradict statements made that houses in Japan were more or less like tents with plaster and paper walls which might collapse at any moment, or be blown away, or set on fire by a thoughtless housemaid; he recalled buildings which had withstood earthquakes for 300 years and others which were actually more than a thousand years old, buildings to which the Tower or Westminster Abbey would be comparatively modern; while as to the idea that one-floor houses were the invariable rule in Japan he observed that there were many houses of five storeys, and pagodas rising to 150ft. and 200ft.

Mr. Arnold Mitchell, Mr. Henry Lovegrove and Prof. Beresford Pite also spoke.

Prof. Pite said it behoved them to ask what was the standpoint of students to-day—were they satisfied with the modern school of design? The future lay with them, and the answer would be visible in their work. We would see there, not the education, not the training, but, abandoning the clap-trap of style, going under the style, would reach the mind itself. Architecture was as much an expression of human thought as music. It had been said that literature and poetry were the highest expressions of the intellect and soul of man; but that was open to doubt; for there were certain aspects of thought and feeling too high for expression in words; words failed; certain music might express them; and equally architecture. It was impossible to express in words the solemn impressions of Westminster Abbey in the afternoon, and the Examining Board dare not ask anyone to explain why the Parthenon was beautiful.

## Builders' Notes.

**The Iron and Steel Institute** will hold its next autumn meeting in New York, on the invitation of several American societies, on October 24th, 25th and 26th, 1904.

**The Parish Hall, Faversham,** has been supplied by Messrs. E. H. Shorland & Brother, of Manchester, with their patent Manchester stoves with descending smoke flues and special inlet tubes.

**At the Fire Exhibition,** through the initiative of the British Fire Prevention Committee, members of various technical societies will pay visits this month. Last Friday the Junior Institution of Engineers visited the exhibition. To-day the British Fire Prevention Committee's own members and the Architectural Association will pay a visit, and next Wednesday the Society of Arts will pay a visit. Other arrangements will be duly announced.

**Subways for Gas and Water Mains.**—A meeting of the Court of the Worshipful Company of Paviors was held last week, when the awards were announced in connection with the recent competition by essays, drawings and models on the subject of subways, as made by the judges, namely, the master (Major Lewis Henry Isaacs, Mayor of Kensington), Mr. D. J. Ross, engineer of the City of London; Mr. J. W. Bradley, engineer of the City of Westminster; and Mr. William Weaver, engineer of the Royal Borough of Kensington. Twenty-six competitors submitted essays, drawings and models, which, on the whole, were well conceived. Some were of very considerable merit, and ultimately the awards were made as follows:—First premium, £105, to Mr. R. M. Parkinson, 93, Lincoln Road, Peterborough; second premium, £31 10s., competitor's name at present unascertained; third premium, £21, Mr. F. M. Royle, A.M.I.C.E., Third Avenue, Sherwood Rise, Nottingham. The premiums will be remitted to the first and third prize-winners at once, and to the second competitor as soon as his name can be ascertained. It is hoped that the drawings will shortly be on exhibition at the Guildhall, London, and that Mr. Parkinson's essay will be published in due course.

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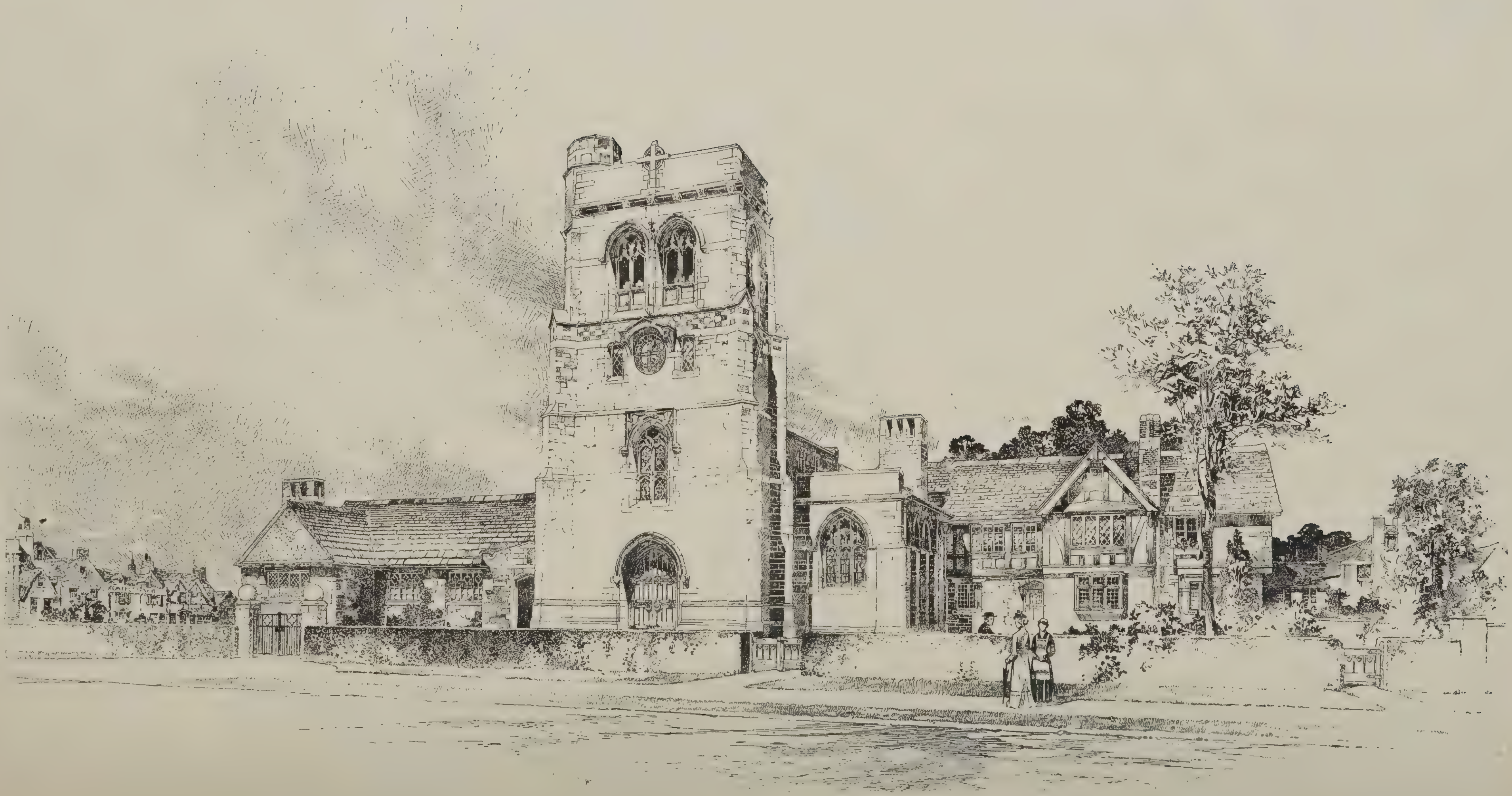
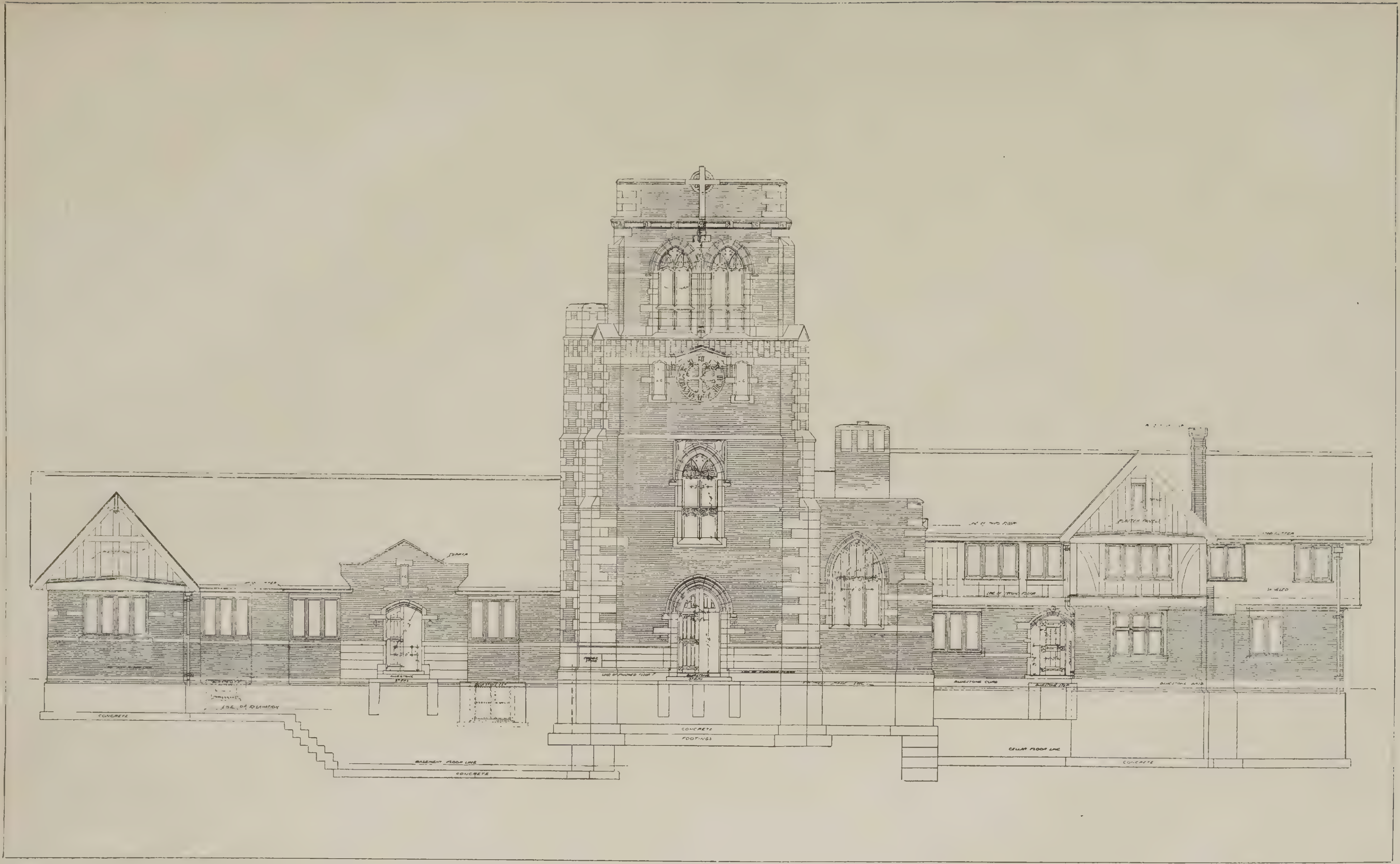
*Supplement to*
The Builders' Journal and Architectural Record
*Wednesday, October 7th*, 1903.





St, Mary's Church, Parish House and Rectory, Walkerville Ont. Cram, Goodhue and Ferguson, Architects.

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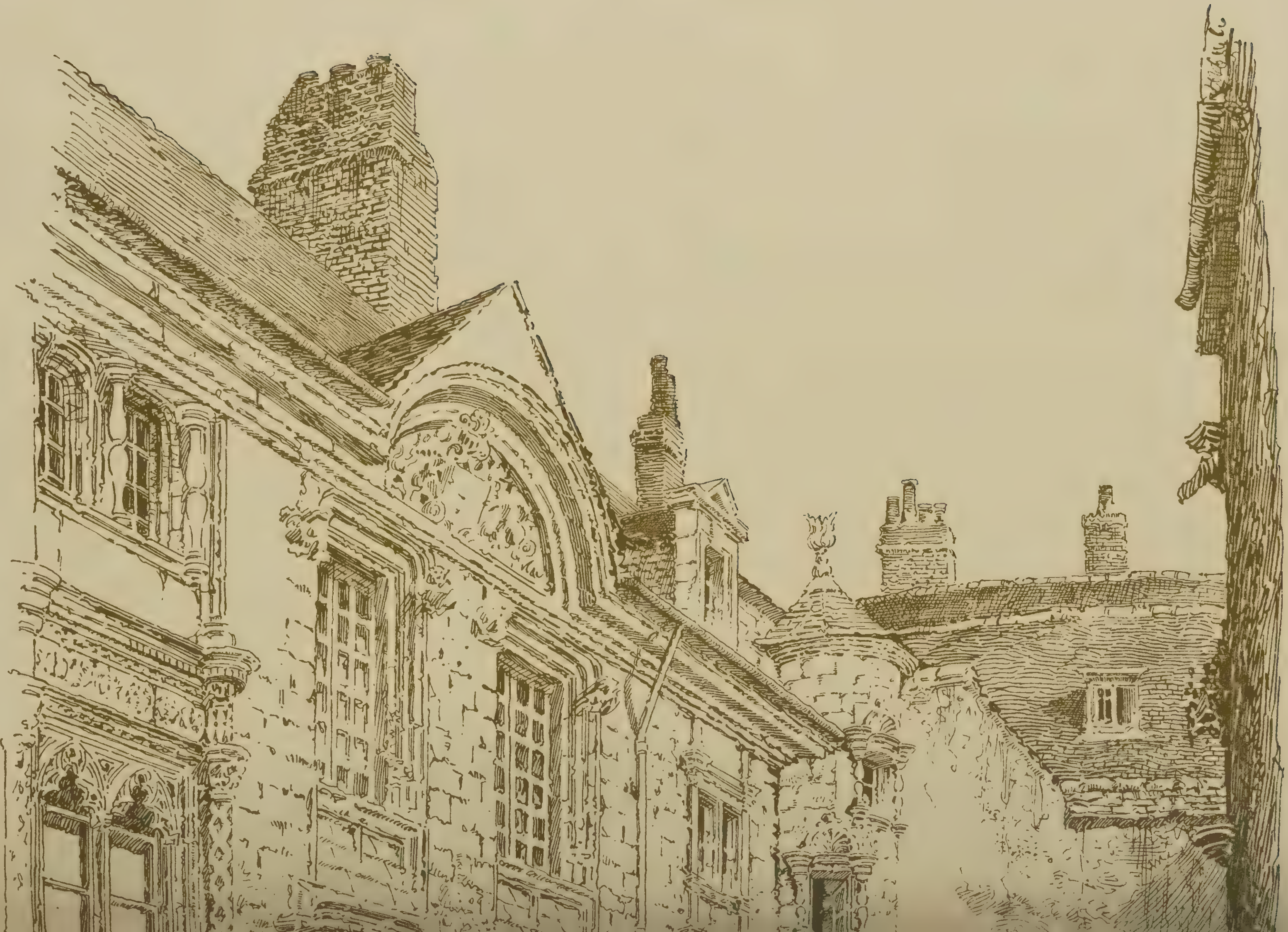

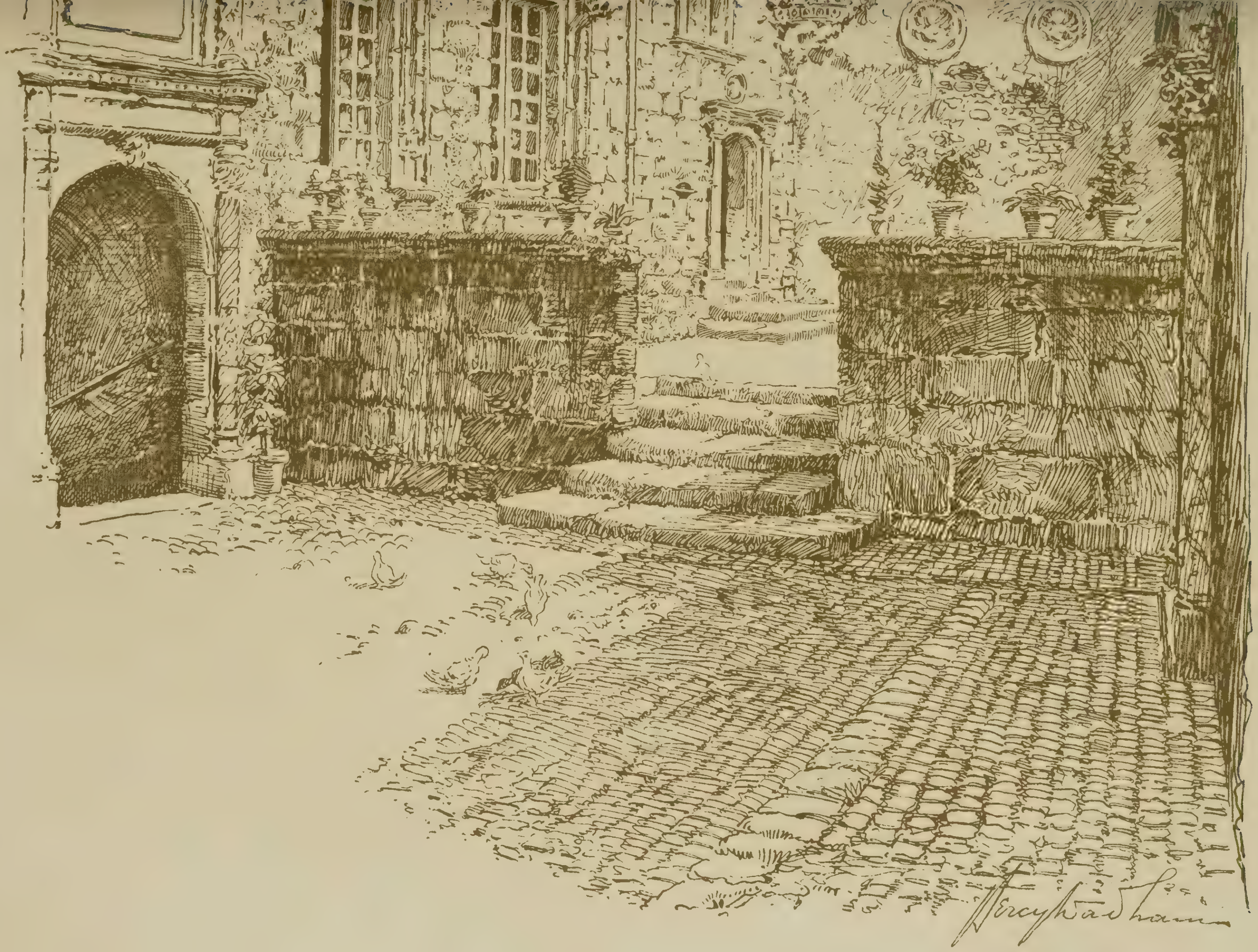

HÔTEL L'ALLEMAND, BOURGES: THE COURTYARD DRAWN BY PERCY WADHAM, A.R.E.

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# MODERN LONDON BUILDINGS.

(*Continued from* p. 95, *No.* 449.)

*The following lists have already been published:—E.C. district: Public and semi-public buildings, March 25th; domestic and religious buildings, colleges and schools, April 1st; business premises, April 15th, April 29th and May 13th; hotels, restaurants, &c., May 13th. E. district: Public and semi-public buildings, June 3rd and August 5th; religious buildings, colleges and schools, July 8th; business premises, domestic buildings, hotels, restaurants and public-houses, August 5th. S.E. district: Public and semi-public buildings, August 5th and 19th; religious buildings, August 19th; business premises and domestic buildings, September 2nd; colleges and schools, and hotels, &c., September 16th.*

## N. DISTRICT: PUBLIC AND SEMI-PUBLIC BUILDINGS.

| BUILDING. | ARCHITECT. | APPROXIMATE COST. | REMARKS. |
|---|---|---|---|
| **1875.** | | £ | |
| Alexandra Palace, Muswell Hill. | John Johnson Architect to the Co. | — | As in the building formerly occupying the site, the great hall forms the central transept, but in the place of a dome it has a semi-circular roof supported on four rows of columns; the hall thus obtained is 386ft. by 184ft., the central span being 85ft. Right and left are two courts 210ft. by 140ft., with corridors on either side; beyond are two large conservatories surmounted by glass domes. |
| **1878.** | | | |
| Vestry Hall, Islington - | Arthur Allom. | | |
| **1879.** | | | |
| Holborn Union Infirmary, Upper Holloway. | H. Saxon Snell | 80,000 | The infirmary accommodates 624 patients. |
| **1881.** | | | |
| South Hornsey Local Board Offices, &c., Milton Road, South Hornsey. | E Fry | 9 000 | Built of Portland stone. Besides board- and committee-rooms, the buildings include a fire station and a mortuary, the whole block being 140ft. long by 96ft. deep. |
| **1882.** | | | |
| Assembly Rooms, Wood Green. | Henry Stone | — | Accommodation is provided for 750 persons. The hall is 73ft. long by 35ft. wide and 19ft. high. |
| Evangelical Protestant Deaconesses' Institution and Training Hospital, Tottenham. | E. C. Robins | — | The southern block contains the kitchens and domestic offices, with the probationers' dormitory over. The administrative block is towards the western portion of the site, together with the director's house, &c. The hospital block faces the east, and is two storeys high. It contains four sick wards of twelve beds each, 1,200 cub. ft. being allowed for each bed. The first floor is occupied by private wards. |
| **1883.** | | | |
| Congregational Hall, Hornsey. | Lander & Bedells | 2,383 | The hall accommodates 350 persons. There are seven classrooms attached and an infants' room for 150 children. |
| **1885.** | | | |
| Town Hall, Lower Fore Street, Edmonton. | Eachus, Engineer to Local Board | 9,000 | The ground floor contains the offices of the Local Board. The large hall is 94ft. long by 38ft. wide and 24ft high. |
| **1886.** | | | |
| Great Northern Central Hospital, Holloway Road. | Young & Hall | 40,300 | The hospital provides accommodation for 150 patients. There is an administrative block at the back, also a rectangular ward block providing an air-space of 1,613 cub. ft. per bed. The outpatients department comprises a hall for 200 patients. There is a mortuary block in addition. |
| **1889.** | | | |
| Isolation Hospital Totterdown Lane, Hornsey. | T. de Courcey Meade | 3.376 | In addition to the administrative block, mortuary, &c., there are two wings containing five beds each. The building was designed for ten patients, but can accommodate more if necessary; 2,030 cub. ft. of air-space are allowed for each bed. |
| **1892.** | | | |
| Free Public Library, Stoke Newington. | Bridgman & Goss | 2,648 | |
| Islington Public Baths, Hornsey Road. | A. Hessell Tiltman | 32,000 | The baths occupy a site of 2½ acres, and include separate swimming baths for men and women, private baths, laundry, &c. |
| North-Eastern Fever Hospital, St. Ann's Road, Stamford Hill. | A. & C. Harston | — | The site of 15 acres was covered with fifty buildings mainly of a temporary nature, but provided with the most approved system of heating, ventilating and drainage. Twenty-four are patients' wards, thirteen are devoted to the nursing staff, and the remainder consist of stores, kitchens, laundry and administrative department. Most of the ward buildings are 120ft. by 24ft and stand upon brick piers on a concrete foundation platform. They are constructed of wood, the floor and walls double boarded, with a layer of felt between, and a double roof, with corrugated iron covering. The buildings are connected by a covered way, under which is a brick duct, carrying all the steam, water, gas pipes, &c. The hospital will accommodate 548 patients and a working staff of 207 persons. |
| **1893.** | | | |
| Great Northern Central Hospital, Holloway Road. | Keith D. Young & Henry Hall | — | The ward block is 57ft. 6in. internal diameter, and in each of its three wards contains twenty beds, with windows between. On the west side on each floor are ward offices: these comprise a one-bed ward and duty-room next the circular building. The new front building comprises the secretarial offices, medical staff sitting-rooms and board-room. The upper floors have single-bedded wards for paying patients. The centre back building has consultation room, surgery, retiring-rooms with bedrooms, and an operating theatre on the first floor. The outpatients' department forms a separate block in the rear. |
| **1894.** | | | |
| Cottage Hospital, Bounds Green Road, Wood Green. | Charles Bell | 2,000 | The hospital contains two wards each having four beds for men and women, two isolation wards, with one bed in each, separate operating room, nurses' bedrooms, kitchen, &c. |
| Nurses' Home, London Fever Hospital, Islington. | Keith D. Young | 5,113 | The building provides separate bedrooms for thirty-one nurses, with a room for two sick nurses and one for two servants. Two large common sitting-rooms are provided, also separate sitting-rooms for the Home sister, night superintendent and the matron's assistant; these are all on the ground floor. There are box-rooms, lavatories and bathrooms on each floor. Externally the building is faced with picked stocks, with red brick arches and quoins, and cast cement dressings, sills, &c., to windows. |
| **1895.** | | | |
| Passmore Edwards Public Library (Charles Lamb Memorial), Plevna Street, Lower Edmonton. | Maurice B. Adams | — | The building contains on the ground floor a reading- and newspaper-room 40ft by 20ft., a lending library and boys' room. On the first floor is a gallery, forming an approach to the reference and magazine rooms. On the second floor are the stores and mending rooms. The librarian's residence is on the first floor, the kitchens being in the basement. |
| **1896.** | | | |
| Public Baths and Washhouses, Hornsey Road, Islington (additions). | A. Hessell Tiltman | 5,000 | These additions doubled the existing public washhouses and laundry accommodation, and also included the building of Turkish baths, additional slipper baths and a public refreshment-room. |
| Public Baths, Caledonian Road, Islington (additions). | A Hessell Tiltman | 13,000 | The additions comprise a swimming bath for women and the enlargement of the slipper baths and washhouses. The work added another storey to the existing buildings. |
| **1897.** | | | |
| Collins' Theatre, Islington Green (rebuilding). | C. A. E. Woodrow | — | Seating accommodation is provided for 1,800 persons. |
| Convalescent Home for the National Hospital for the Paralysed and Epileptic, East Finchley. | R. Langton Cole | 10,000 | The building stands on a site of 4 acres, and contains on the ground floor accommodation for thirty women and six men. The dining-hall is 30ft. by 24ft. and 20ft. high, in which all the patients have their meals. Opposite this hall is the kitchen with its offices, while beyond it a corridor leads to the men's wing. The first floor, which does not extend over the men's wing, contains bedrooms for the nurses and servants and a sitting-room for the former. |
| Police Court, corner of Bishop's Road and Archway Road, Highgate. | F. H. Pownall | 6,000 | The accommodation on the ground floor consists of solicitors' room, clerk's room, and public waiting-rooms for men and women, cells and caretakers' quarters. On the first floor there are two courts with consulting-room and magistrates' room. |
| The Queen's Opera House, Crouch End. | Frank Matcham | — | The proscenium opening is 26ft. square and the depth of the stage is 35ft. The height from the floor to the grid of the stage is 50ft., and the actual width of the stage is 54ft. There is a lounge and saloon 50ft. by 25ft. on the ground floor. Twelve dressing-rooms are provided. |
| **1898.** | | | |
| Alexandra Theatre, Stoke Newington Road. | Frank Matcham | — | The auditorium is decorated in the Elizabethan style. |
| Shoreditch Public Library, Pitfield Street, Hoxton. | Henry T. Hare | — | The heating is by exhaust steam, derived from the engines of the electric-lighting station. |

### N. DISTRICT: PUBLIC AND SEMI-PUBLIC BUILDINGS—*cont.*

| Building. | Architect. | Approximate Cost. | Remarks. |
|---|---|---|---|
| **1899.** | | £ | |
| Empire Theatre, Holloway Road. | W. G. R. Sprague | — | The approach to the auditorium is from a crush-room, marble stairs leading to lounges, communicating with the auditorium, which is about 55ft. wide. with a depth of about 70ft. The stage is about 65ft. wide, with a depth of 35ft. and a height to grid of more than 50ft. |
| Fire Station, Upper Street, Islington. | W. E. Riley, Architect to the L.C.C. | — | The building is of red brickwork with Portland stone dressings. It consists of four floors, exclusive of basement, and has a frontage of 54ft. to Upper Street. with a return northern elevation of about 50ft. to Florence Street. The front of the building has accommodation for nineteen firemen and two coachmen. and the station has stabling for four horses, with a basement consisting of stores and workshops. The ground floor consists of an engine-room 27ft. by 40ft. The block facing Florence Street provides accommodation for four married and five single men. |
| Infirmary for the parish of St. Mary Islington, Highgate Hill. | William Smith | 181,583 | The building will accommodate 800 inmates. The late small-pox hospital which formerly stood on the site is altered to form part of the administrative section. and contains about ninety bedrooms for nurses, baths, lavatories and w.c.'s, in addition to suites of rooms for the medical superintendent, assistant medical officers and matron, &c. The declivity of the ground has rendered it necessary to make the wards on the lower part of the ground four storeys high, and those on the north side only three storeys high. with the roof all on one level. The wards are 100ft. apart, and are connected by enclosed corridors on the two lower floors and also by open iron galleries for fire-escape purposes. |
| **1900.** | | | |
| The Grand Theatre, Islington (reconstructed). | Frank Matcham | — | This building, which was partially destroyed by fire, was rebuilt in 1900. The old front remains unaltered, but the rear portions, including the dressing-rooms, was pulled down and remodelled. The stage remains as before. |
| Isolation Hospital, World's End, Enfield. | Collins, Surveyor to the District Council. | | |
| Public Swimming Bath for Women, Hornsey Road Baths, Hornsey. | A. Hessell Tiltman | — | The extension comprises a first-class swimming bath for women, thirty-seven additional private baths, new stores and engine-room extension, new establishment laundry, and two artesian wells. |
| Edmonton Public Baths, Council-Chamber, &c. | W. Gilbee Scott | — | The council-chamber is on the first floor, with committee-rooms below. The baths are placed at the angle of the site, one bath being covered and the other open. The swimming pond of the former is 90ft. by 30ft., and has fifty dressing-boxes. A club-room and an establishment laundry are provided. |

*(To be continued.)*

## Keystones.

**Liverpool Cathedral.** — The committee decided last week to use local red sandstones as the building material.

**Competitive Designs for remodelling Southwark Bridge** are to be invited. They are to be "as artistic as possible."

**Notice of Removal.**—Messrs. Edward le Bas & Co., metal merchants, have removed to Dock House, Billiter Street, E.C.

**Llandovery College** has been extended by the addition of several buildings from plans by Messrs. Austin & Paley, of Lancaster. Mr. Mercer, of Llanelly, was the contractor.

**Walsingham House, Piccadilly,** is to be pulled down for the purposes of the new Ritz Hotel, which is to cover the area from the Green Park to Arlington Street.

**County Architect for Carnarvon.**—Mr. Rowland Lloyd Jones, of Carnarvon, has been selected out of thirty-three applicants for the post of architect to the county of Carnarvon.

**A new Market Hall at Leeds** is being erected in Vicar Lane from designs by Messrs. Leeming & Leeming. Mr. James Reid is the clerk of works.

**The Members of the Art Workers' Guild** are paying a three weeks' tour to Italy. Most of their time will be spent in Rome, but short stays will be made by the party (thirty in number) at Orvieto, Milan and Florence.

**A School Competition.** — The Usworth School Board have appointed Mr. Stephen Wilkinson, Chester-le-Street and Mosley Chambers, Newcastle, architect for the new schools at Springwell, to accommodate 500 children. His plans were placed first in a limited competition.

**Devon and Exeter Architectural Society.**—A party of members of this Society recently visited the new Naval College at Dartmouth. They were entertained at luncheon by the president of the Society, Mr. A. S. Parker, A.R.I.B.A., who in the course of his address referred to architects' registration. He said he believed that a large section of provincial architects held that—whatever defects there might be in any particular Bill previously set forth—even an imperfect Bill would be better than no Bill at all. Mr. Aston Webb, A.R.A., referred to the fact that in about a month it would be his duty to deliver the usual address to the Institute, and he had been devoting serious thought to several matters, among them being education and registration, which he would not enter into that day.

**The Empire Theatre, Newcastle,** in Newgate Street, which has been altered from designs by Mr. Frank Matcham, is estimated to hold about 4,000 people, twice the number previously housed.

**Junior Institution of Engineers**—Mr. J. Fletcher Moulton, K.C., F.R.S., M.P., has been elected president of the Junior Institution of Engineers in succession to Colonel Edward Raban, C.B., R.E.

**A new Workhouse and Infirmary at Hunslet** has been erected at a cost of £85,850. Mr. J. H. Morton, F.R.I.B.A., of South Shields, was the architect, and Messrs. Harold Arnold & Son, of Doncaster, were the builders.

**The Roman Wall and Archway discovered at Newgate,** the former being part of the Roman external wall of defence which was built round the City in the fourth or fifth century, can be seen till to-morrow night. Afterwards they will be demolished.

**Hull Town Hall Scheme Adopted.**—On Thursday last, after much discussion, the Hull City Council adopted the amended plans for the extension of the town hall, and instructed the town clerk to advertise for tenders for carrying out the work, which is estimated to cost £100,000.

**The Seaside or Country House** illustrated on p. 133 of this issue is intended to meet the requirements of a family spending a few months' holiday together every year. The feature is a large sitting-hall, a room specially useful during wet weather, a time when drawing-room, study or other private rooms are not wanted. There is a serving hatch between the dining-room and kitchen to avoid traffic through the hall. The bedrooms on the ground floor would be heated, whenever necessary, by gas or oil stoves having ventilation flues in the side gable, as shown. The two bedrooms on the first floor would have fire-grates. The house could be well built for about £500; outside walls to be of red brick and rough-cast, with tiles on the roofs. The house was designed by Mr. Arthur J. Bird, architect, of Kettering.

## SKETCHES WANTED.

As already announced, we offer two guineas for the best pen-and-ink sketch and two guineas for the best sketch in wash of some detail on a modern building. Particulars of the competition will be found on p. 126 of last week's issue or on p. 106 of the issue for September 23rd. The sketches are to be sent in by the end of October.

## Bricks and Mortar.

**Aphorism for the Week.**

*All great art is delicate, and fine to the uttermost.*—Ruskin.

**Our Plates.** St. Mary's Church, Parish House and Rectory, Walkerville, Ont., is a very characteristic work of Messrs. Cram, Goodhue & Ferguson, who are one of the most eminent firms of architects in America. The design is therefore peculiarly interesting as showing what treatments are favoured on the other side of the Atlantic. The study of our own Gothic churches is apparent in the design, which bears, too, a strong affinity to the work of the late Mr. Sedding, especially in the tower. The church forms the centre of the building, consisting of a nave with chapel on one side, choir and sanctuary, choir and organ rooms, sacristy and chapel sanctuary. The parish house, which embraces a hall with a classroom in each projection front and rear, with serving-room, &c., forms the left wing, while the rectory is on the right. The buildings are shown to be of brickwork with slate roofs and half-timbered gables.

**Forthcoming Bradford Exhibition.** Arrangements are being actively pressed forward for the exhibition of art and industries which the Bradford Corporation intends to hold next year in Lister Park, Manningham, in celebration of the opening of the Cartwright Memorial Hall. In this hall an art exhibition will be brought together, and will form the chief feature of the exhibition. A large hall for housing the industrial exhibits will be erected to the west of the memorial hall. The design has been prepared by the honorary joint-architects, Mr. James Ledingham, F.R.I.B.A., and the city architect of Bradford, Mr. F. E. P. Edwards, A.R.I.B.A. The main body of the building will be 300ft. long, with an average width of 180ft. It will consist of a high central nave 60ft. wide, running the full depth of the building, with three transepts on either side, each 60ft. by 120ft. The buildings will be of corrugated iron, with a façade of fibrous plaster. It is anticipated that they will be be finished before Christmas. A concert hall will also be erected; it will not, however, be begun till the New Year. About 6,000 sq. yds. of soil will have to be removed in order to obtain the levels necessary in building the Industrial Hall; and this will have to be put in order again. At Glasgow about £16,000 was spent in restoring the park after the exhibition.

# Tenders.

*Information from accredited sources should be sent to "The Editor" at latest by noon on Monday if intended for publication in the following Wednesday's issue. Results of Tenders cannot be accepted unless they contain the name of the Architect or Surveyor for the work.*

*Addressed postcards on which lists of tenders may be stated will be sent post free on application to the Manager,* BUILDERS' JOURNAL, 9, *East Harding Street, E.C.*

**Ampthill.**—For the erection of an isolation hospital at Ampthill. Mr. H. Percy Adams F.R.I.B.A., architect, 28, Woburn Place, Russell Square, London, W.C.:—

| | Buildings. | Roads. |
|---|---|---|
| Higgs & Hill, Lambeth | £9,544 | £378 |
| Colls & Sons, London | 8,987 | 387 |
| Longley & Sons, Crawley | 8,450 | 375 |
| Gough & Co., Hendon | 8,294 | 280 |
| Dunham, Luton | 8,160 | 300 |
| Sharp Ampthill | 7,869 | 285 |
| Kerridge & Shaw, Cambridge | 7,666 | 325 |
| Foster,* Kempston | 7,600 | 267 |
| [Architect's estimate | 7,800 | 250] |

* Accepted.

**Crosby, (near Liverpool).**—For the erection of new works for Mr. James Armstrong. J. H. Havelock, architect, Sutton:—

| | |
|---|---|
| J. Henshaw & Sons | £1,962 |
| R. Costain | 1,475 |
| J. Holme | 1,388 |
| J. & G Chappell | 1,361 |
| W. Mulholland | 1,359 |
| J. W. Weeks & Son | 1,350 |
| T. Spencer | 1,330 |
| W. Gleaves,* 101, Dale Street, Liverpool | 1,237 |

* Accepted.

**Croydon.**—For the erection of a Board school, Ingram Road, Thornton Heath, for 1,166 children. Mr. H. Carter Pegg, architect, Thornton Heath:—

| | | | |
|---|---|---|---|
| Roberts & Co. | £20,948 | J. & C. Bowyer | £18,300 |
| C. Ansell | 19,500 | Smith & Sons, Ltd. | 18,186 |
| Leslie & Co., Ltd. | 19,495 | Akers & Co. | 18,128 |
| Cook & Sons | 19,150 | J. & M. Patrick | 17,900 |
| Smith & Sons | 18 945 | Bulled & Co. | 17,153 |
| Rowland Brothers | 18,598 | Knight & Son | 16,987 |
| Martin, Wells & Co. | 18,596 | Kerridge & Shaw,* Cambridge | 16,629 |
| Wilcock & Co | 18,500 | | |

* Recommended for acceptance.

**Dover.**—For the erection of a congregational church, High Street, Dover. Messrs. Cresswell & Newman and Mr. W. Beeston, joint architects, 54, Castle Street, Dover:—

| | | |
|---|---|---|
| Tuff & Miskin | £7,309 | 9 |
| E. Stokes | 7,306 | 0 |
| Lewis & Son | 7,250 | 0 |
| Warren & Son | 7,142 | 0 |
| J. J. Beaufoy | 7,116 | 8 |
| Denne | 6,941 | 0 |
| J. Wise | 6,900 | 0 |
| W. J. Adcock | 6,850 | 0 |
| Game | 6,774 | 0 |
| Paramor | 6,589 | 0 |
| Austin & Simms | 6 421 | 0 |
| R. Brisley,* Dover | 6,382 | 10 |
| G. Munro | 5,927 | 0 |

* Accepted.

**Grimsby.**—For the erection of a new residence, Bargate, Grimsby. Mr. H. C. Scaping, architect, Court Chambers, Grimsby:—

| | | | |
|---|---|---|---|
| Hewins & Goodhand | £1,497 | 0 | 0 |
| J. Waterman | 1,485 | 10 | 0 |
| Gilbert & Kirton | 1,367 | 0 | 6 |
| Smith & Hodson | 1,360 | 0 | 0 |

* Accepted. [All of Grimsby.]

**Ipswich.**—For the following, for the Corporation:—Specification No. 15, arc and incandescent lighting and power circuits and fittings in generating station, offices, car-shed, workshop and refuse destructor house:—

| | | | |
|---|---|---|---|
| W. J. Barclay, Ipswich | £1,834 | 5 | 6 |
| Lea, Son & Co., Shrewsbury | 1,469 | 19 | 2 |
| Woods, Slacke & Co., Blackburn | 1,419 | 11 | 10 |
| D. Firth & Son, Manchester | 1,208 | 5 | 6 |
| Tamplin & Makovski, Ltd., Redhill | 1,159 | 16 | 9 |
| A. C. Dickens, Northampton | 1,152 | 19 | 4 |
| Hall & Hackblock,*† Ipswich | 1,140 | 9 | 10 |
| G. N. C. Maure, Lowestoft | 1,c64 | 17 | 9 |

* Accepted.

† To be completed in five weeks from date of acceptance. Note.—Above amounts include £80 for contingencies.

**Ipswich.**—For the erection of new shops in Fore Street. Mr. H. Winkworth, A.M.S.I., architect, "Tower Chambers," Hatton Court, Ipswich:—

| | |
|---|---|
| H. J. Linzell | £1,500 |
| C. Steam & Co. | 1,494 |
| F. Bennett | 1,450 |
| W. H. Death | 1,439 |
| A. Sadler | 1,350 |
| W. Grayston | 1,285 |
| Cooper & Haward | 1,245 |
| T. Parkington & Son* | 1,210 |

* Accepted.

**Kingswood (near Bristol).**—For the erection of school buildings in Hanham Road, Kingswood, near Bristol, to accommodate 990 children, for the Gloucestershire Education Committee. Messrs. John Mackay & Sons, architects and surveyors. Kingswood, Bristol Quantities by Mr. M. Froud, Bristol:—

| | | | |
|---|---|---|---|
| H. Forse & Son | £14,500 | 0 | 0 |
| Walters & Son | 13,570 | 0 | 0 |
| Bennett Brothers | 13,385 | 0 | 0 |
| E. Love | 12,885 | 0 | 0 |
| J. Browning | 12,734 | 0 | 0 |
| G. Humphreys | 12,680 | 0 | 0 |
| E. Clark | 12,600 | 0 | 0 |
| Stephens & Bastow | 12,418 | 0 | 0 |
| A. J. Beaven | 12,390 | 0 | 0 |
| W. Cowlin & Son | 12,350 | 0 | 0 |
| R. Wilkins & Sons | 11,874 | 0 | 0 |
| Adams&Jefferies,*Oldland Common | 11,396 | 0 | 0 |
| J. E. B. James | 10,795 | 19 | 8 |
| Plumbers and gasfitters. | | | |
| Slade & Co. | 780 | 0 | 0 |
| A. J. Tutcher | 730 | 0 | 0 |
| G. F. Tuckey | 684 | 0 | 0 |
| A. S. Scull | 670 | 0 | 0 |
| J. E. B. James | 660 | 0 | 0 |
| S. H. Povey | 619 | 0 | 0 |
| J. Wilkins & Son* | 595 | 0 | 0 |
| A. E. Wilkins | 594 | 0 | 0 |
| Heating. | | | |
| Dark Brothers | 748 | 14 | 0 |
| Bradford | 599 | 15 | 0 |
| A. H. Skinner & Co.* | 452 | 0 | 0 |
| J. Weech & Son† | 405 | 0 | 0 |
| J. Williams & Son,† Cardiff | 400 | 0 | 0 |

* Accepted [Rest of Bristol.]

† These tenders did not supply sums according to instructions, which, if they had been added, would have appeared higher than the accepted.

**Leicester.**—For remodelling Knighton and Saffron lanes, known as contract No. 1; also for the construction of gymnastic appliances, iron fencing, &c., known as contract No. 2; and erection of shelter, lavatories and w.c.'s, known as contract No. 3, and other works in connection therewith, for the Parks and Recreation Grounds Committee of the Leicester Corporation. Mr. E. George Mawbey, M.I.C.E., borough engineer and surveyor:—

| | | | |
|---|---|---|---|
| Contract No. 1. | | | |
| Leicester Builders, Ltd. | £2,777 | 9 | 7 |
| T. Philbrick | 2,561 | 11 | 9 |
| J. Hutchinson & Son | 2,540 | 0 | 0 |
| J. H. Smedley* | 2,477 | 0 | 0 |
| Contract No. 2. | | | |
| Leicester Builders, Ltd. | 1,401 | 11 | 10 |
| Gimson & Co., Ltd. | 1,249 | 4 | 4 |
| Needham & Lowe | 1,200 | 0 | 0 |
| G. Potter & Sons | 1,197 | 0 | 0 |
| W. T. Burbidge | 1,135 | 0 | 0 |
| S. Wright* | 1,025 | 15 | 7 |
| Contract No. 3. | | | |
| J. H. Smedley | 397 | 0 | 0 |
| W. Hanson | 394 | 0 | 0 |
| F. Beck & Co. | 393 | 0 | 0 |
| Clark & Garrett | 382 | 0 | 0 |
| S. Philp | 379 | 0 | 0 |
| W. G. Harrison | 379 | 0 | 0 |
| Tyres & Yates, Ltd. | 376 | 0 | 0 |
| Leicester Builders, Ltd. | 362 | 19 | 11 |
| F. Neal | 362 | 0 | 0 |
| W. G. Simons* | 358 | 0 | 0 |

* Accepted. [All of Leicester.]

**Leicester.**—For the enlargement of Leicester Head Post-Office, for H.M. Office of Works, &c.:—

| | | | A. | |
|---|---|---|---|---|
| J. E. Johnson & Son | £12,127 | 0 | £186 | 0 |
| E. W. Beech | 11.984 | 0 | 50 | 0 |
| G. Dusebury | 11,588 | 15 | 176 | 1 |
| J. Chapman | 11,200 | 0 | 175 | 0 |
| J. H. Clayton | 11,198 | 9 | 125 | 0 |
| O. Wright | 10,998 | 0 | 120 | 0 |
| C. Wright | 10,975 | 0 | 125 | 0 |
| T. Herbert | 10,845 | 0 | 130 | 5 |
| H. Herbert & Sons* | 10,780 | 0 | 130 | 0 |

* Accepted. [A. Credit old materials.]

**London, N.E.**—The following tenders have been received by the Hackney Borough Council:—

| | | | |
|---|---|---|---|
| Electricity supply mains. | | | |
| Glover & Co. | £2,940 | 12 | 1 |
| St. Helens Cable Co. | 2,893 | 6 | 8 |
| Callender Cable Co. | 2,890 | 8 | 1 |
| British Insulated and Helsby Cables | 2,803 | 14 | 3 |
| Henley's Telegraph Works | 2,614 | 19 | 10 |
| Siemens Brothers & Co. | 2,124 | 2 | 4 |
| Western Electric Co.* | 2,105 | 7 | 6 |
| Arc lamps and pillars. | | | |
| New Century Arc Light Co., Ltd. | 1,510 | 0 | 6 |
| General Electric Co., Ltd. | 1,374 | 12 | 3 |
| Brockie-Pell Arc Lamp Co., Ltd. | 1,285 | 14 | 6 |
| Johnson & Phillips | 1,244 | 12 | 0 |
| Gilbert Arc Lamp Co., Ltd. | 1,243 | 1 | 6 |
| W. T. Allen & Co. | £1,232 | 7 | 0 |
| Johnson & Phillips | 1,182 | 13 | 0 |
| Crompton & Co., Ltd. | 1,167 | 0 | 0 |
| Crompton & Co., Ltd.* | 1,160 | 13 | 0 |
| Oliver & Co. | 1,119 | 19 | 11 |
| Oliver & Co. | 1,111 | 10 | 11 |

For 500 electrolytic meters.

Reason Manufacturing Co., 36s. 6d. and 60s. per meter, according to size.*

For 500 motor meters.

Ferranti, Ltd., 36s. and 117s. per meter, according to size.*

Engine foundations.

In consequence of the decease of Mr. B. E. Nightingale, whose tender had already been accepted by the Council for carrying out the construction of the engine foundations, it has been necessary to prepare the contract in the names of his successors, Messrs. A. C., W. H., A. E., F. A. and P. G. Nightingale.

* Recommended for acceptance.

**Lower Gornal, near Dudley.**—For extensions to boys' school, Robert Street, Lower Gornal, for the Sedgley School Board. Mr. A. Ramsell, architect and surveyor, Dudley:—

| | | |
|---|---|---|
| J. Herbert, Wolverhampton | £2.597 | 0 |
| Hilton & Caswell, Sedgley | 2,499 | 4 |
| T. & S. Ham, Wolverhampton | 2,445 | 0 |
| C. Griffiths, Lye, near Stourbridge | 2,425 | 0 |
| H. Dorse, Cradley Heath, Staffs | 2,420 | 0 |
| F. L. Jones, Wolverhampton | 2,391 | 0 |
| R. Speke & Sons, Wolverhampton | 2,339 | 0 |
| George Cave & Son, Wolverhampton | 2,330 | 0 |
| Oakley & Coulson, Dudley | 2,319 | 0 |
| J. Dallow, Blackheath | 2,300 | 0 |
| M. Round, Dudley | 2,275 | 0 |
| E. Seckerson, Scotts Green, Dudley | 2,200 | 0 |
| H. Gough,* Wolverhampton | 2,190 | 0 |

* Accepted.

**Lytchett Minster (Dorset).**—For making new roads and for building new culverts at Lytchett Minster, for Sir Elliott Lees, Bart., M.P. Mr. R. T. S. Seymour, surveyor, Wimborne:—

| | | | |
|---|---|---|---|
| T. Street, Bristol | £2,692 | 13 | 9 |
| P. Tryhorn & Son, Salisbury | 2,618 | 16 | 0 |
| W. P. Saunders, Bournemouth | 2,246 | 10 | 0 |
| G. Blaney, Lytchett Matravers | 2,235 | 17 | 6 |
| S. Ambrose, Bath | 2,082 | 15 | 4 |
| J. Wyatt, Poole | 2,047 | 9 | 1 |
| G. T. Budden, Poole | 1,906 | 19 | 8 |
| Grounds & Newton, Bournemouth | 1,896 | 0 | 0 |
| Gates & Gulliver, Upper Parkstone | 1,805 | 3 | 0 |
| H. C. Brixey,* Parkstone | 1,779 | 6 | 8 |

* Accepted.

**Isleworth.**—For the making-up of the following roads: Castle Road, Loring Road, Grainger Road, Nottingham Road, all in Isleworth, for the Hesson and Isleworth Urban District Council. Mr. P. G. Parkman, engineer and surveyor, Town Hall, Hounslow, W.:—

| | Loring Road. | Grainger Road. | Castle Road. | Nottingham Road |
|---|---|---|---|---|
| A. C. Soan, Streatham | £884 | — | — | £525 |
| R. Swaker, Hounslow | 853 | £745 | £1,229 | 487 |
| Nowell & Co., Kensington | 796 | 688 | 1,195 | 465 |
| Free & Sons, Maidenhead | 790 | 681 | 1,173 | 458 |
| Neave & Son, Kensal Rise | 759 | 652 | 1,108 | 441 |
| J. Meston | 756 | 660 | 1,124 | 441 |
| E. Iles, jun., Wimbledon | 740 | 589 | 1,096 | 428 |
| Kavanagh & Co., Surbiton Hill | 736 | 634 | 1,085 | 426 |
| Mowlem & Co., Westminster | 734 | 633 | 1,083 | 427 |
| Lawrence & Thacker, Clapham Common, S.W. | 732 | 630 | 1,c65 | 422 |
| T. Adams,* Wood Green, N. | 720 | 622 | 1,058 | 420 |
| [Architect's estimate | 773 | 659 | 1,161 | 423] |

* Accepted.

# Coming Events.

**Wednesday, October 7.**

SANITARY INSTITUTE (Lectures and Demonstrations for Sanitary Officers, Part I.).—Inspection and Demonstration at an L.C.C. Common Lodging House, Parker Street, Drury Lane, W.C., at 3 p.m.

UNIVERSITY COLLEGE, LONDON.—Inaugural lecture on "Architectural Evolution," at 5 p.m., by Prof. F. M. Simpson.

**Thursday, October 8.**

SANITARY INSTITUTE (Lectures and Demonstrations for Sanitary Officers, Part I.).—Mr. A. Wellesley Harris on "Infectious Diseases," at 7 p.m.

MANCHESTER SOCIETY OF ARCHITECTS.—At Chamber of Commerce (44, Mosley Street, Manchester). Presidential Address by Mr. Arthur S. Brewis, at 6 45 p.m.

**Friday, October 9.**

SANITARY INSTITUTE (Lectures and Demonstrations for Sanitary Officers, Part I.).—Mr. Harry R. Kenwood on "Methods of Disinfection," at 7 p.m.

**Saturday, Octobor 10.**

SANITARY INSTITUTE (Lectures and Demonstrations for Sanitary Officers, Part I.).—Inspection and Demonstration at the Sewage and Destructor Works, Ealing, at 2.15 p.m., conducted by Mr. Charles Jones.

NORTH OF ENGLAND INSTITUTE OF MINING AND MECHANICAL ENGINEERS.—General Meeting at Wood Memorial Hall, Newcastle-on-Tyne at 2 p.m. "The Report of the Committee upon Mechanical Coal cutting: Part I., Longwall Machines," open for discussion. Mr. David Burns on "The Anthracitation of Coal." Mr. Edward S. Wright on "Bore-holes for Pumping Purposes." Council Meeting at 1 p.m.

**Monday, October 12.**

SANITARY INSTITUTE (Lectures and Demonstrations for Sanitary Officers, Part I.).—Mr. Henry R. Kenwood on "Elementary Statistics," at 7 p.m.

LIVERPOOL ARCHITECTURAL SOCIETY.—Ordinary Meeting at 13, Harrington Street, Liverpool. Opening Address by Mr. John Woolfall, F.R.I.B A. (president) at 6 p.m.

**Tuesday, October 13.**

SANITARY INSTITUTE (Lectures and Demonstrations for Sanitary Offices, Part I.).—Mr. A. Wellesley Harris on "Water," at 7 p.m.

**Wednesday, October 14.**

INSTITUTE OF SANITARY ENGINEERS, LTD.—Meetings of Examination and Literary Committee at 3.30 p.m., General Purposes and Finance Committee at 4.15 p.m, and of Election Committee, at 5.15 p.m. Members' Sessional Meeting, at 7 p.m.

SANITARY INSTITUTE (Lectures and Demonstrations for Sanitary Officers, Part I.).—Mr. J. Wright Clarke on "Details of Plumbers' Work," at 7 p.m. Inspection and Demonstration in the "District of Islington and at the Borough Disinfecting Station," at 2 p.m, conducted by James R. Leggatt.

ARCHITECTURAL ASSOCIATION (CAMERA AND CYCLING CLUB, at 56, Great Marlborough Street, W.).—Lecture by Mr C. H. Oakden, F.R.P.S., on "Little Known Irish Abbeys," illustrated with lantern slides at 7.30 p.m

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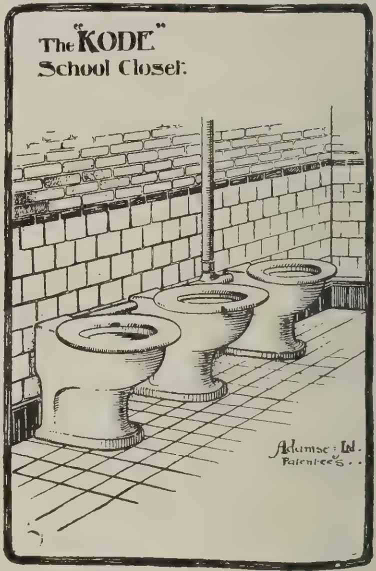

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**ADAMSEZ, Ltd.,**
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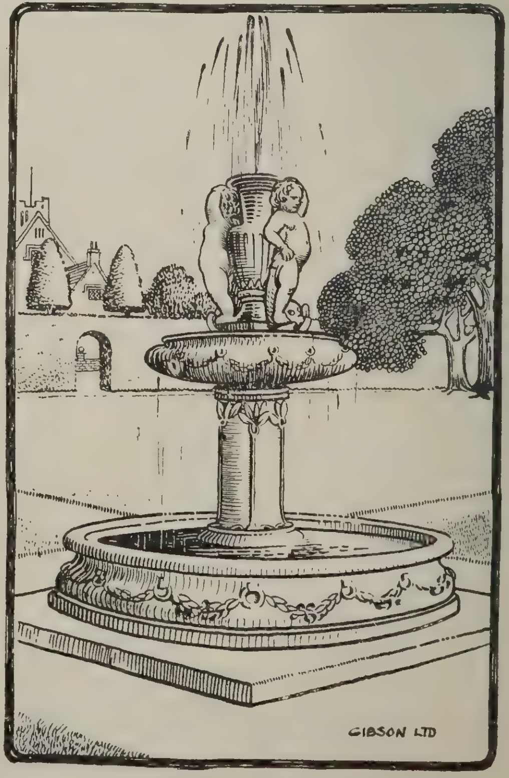
Glasgow, Birmingham, &c.



Buff Terra Cotta Fountain for a Public Park.

# Correspondence.

## "Some New Plans for Dwelling-Houses."

*To the Editor of* The Builders' Journal.

London, W.

Sir,—You invite discussion as to the merits of the plans for dwelling-houses published in your issue for September 16th. There is a familiarity about the arrangement of these plans that makes Mr. Laurence's extraordinary assurance as to their unique merits the more remarkable.

*Plan No. 1.*—This plan may be unique, but what about the party wall?

*Plan No. 2.*—There is nothing very fresh about this plan, except that the dining-room window looks towards the servants' w.c.; and why should the kitchen command the only available garden?

*Plan No. 3.*—Here the scullery and w.c. face the garden.

*Plan No. 4.*—This is a better plan, but the assumption that it is far in advance of anything that has been tried is ludicrous. With a 24ft. frontage a better arrangement could have been made, I should think.

*Plan No. 5.*—There is nothing special about this plan. The kitchen is too small for practical purposes and the dining-room fireplace would not be tolerated.

*Plan No. 6* has a great deal of waste space on bedroom landings.

Briefly, a visit to any suburban estate would have resulted in more ingenuity of planning and would have produced at least one plan with a sitting-room facing into what after all, out of courtesy, we call a garden at the back. The chief difficulty in work of this kind is not so much in the actual planning, but in making a presentable elevation to a serviceable arrangement of rooms, and in skilful grouping of the monotonous repetition of one design. The difficulties are specific and relative to particular situations, where approaches have to be economically arranged for coals and other necessaries. By the way, this important question of coal seems to have escaped Mr. Laurence.

Keen competition has sharpened the wily speculative builder's brain to better results in the matter of planning in as many days as it has taken Mr. Laurence years to evoke these model plans—according to his own account.—Yours truly, P. MORLEY HORDER.

---

*To the Editor of* The Builders' Journal.

London, S.E.

Sir,—To my mind, one of the most objectionable features in houses of the back-addition type is the position of the dining-room, which is generally placed so as to look out upon a long narrow passage. Such an outlook, even in the rare cases where a garden view is obtainable at the far end, must be most depressing. In this class of dwelling the dining-room is probably used more than any other room, for which reason it should be one of the most comfortable. To illustrate a suggestion for effecting an improvement in this direction, I have ventured to rearrange plan No. 2. The accompanying illustration shows the idea. While admitting that such an arrangement would add somewhat to the first-cost of the building, I believe that this would be more than covered by the increased value of the house.—Yours truly,

S. D. TOPLEY.

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*To the Editor of* The Builders' Journal.

Sir,—It has been stated that a person of average intelligence is invariably regarded as a person of less intelligence than oneself, but it is as a person of less than the average intelligence that I would make a few comments on Mr. Laurence's new plans for dwelling-houses. Were it not for your invitation, modesty would prevent one from discussing a series of solutions which "experienced architects have failed to solve," and which have "taken some forty years to perfect."

The frankness of the author is undoubted, and he is to be congratulated on patenting a plan that he considers to be unique. One ventures to think how congested the Patent Office might become if every plan that was thought unique were patented. That the author has his eye to business is clear, and ready to hand we at once have the patent plan with its treble-barrelled title, namely, "The Intersecting Continuous Ground-floor Dwellings." The author is justly and proudly entitled to claim full credit for this new departure, with its enormous possibilities in the future for the double, treble or even quadruple nomenclature of plans that would occur to the fertile mind.

As to plan No. 1, no reader of your journal would for one moment dispute the author's claim that it is unique. Its treble-barrelled description is unique in itself, quite apart from its passages which would form such excellent skittle-alleys, its cheerful dining-rooms, its soil-pipes on the front with their possibilities of treatment, to say nothing of the arrangement of steps around the bedroom doors. But, Sir, one is even alarmed to think that, after all, the wicked local authority might raise an objection. Authorities have no conscience, and this conception that has taken forty years to perfect might be objected to on account of its party-wall. In the interests, however, of the author, I hasten to point out that even if these houses were erected in some salubrious suburb, an outbreak of fire in the drawing-room on the first floor might extend somewhat rapidly to both houses, and one shudders at the catastrophe if the author himself happened to be in residence at the time, taking a well-deserved rest after his forty years of labour.

Attention is drawn in plan No. 2 to an improvement in the dining-room, which can be seen at a glance and apparently concerns the outlook of the window of this room on to the entrance to the servants' w.c., while the juxtaposition of the latter with the kitchen fireplace may possibly account for the omission of the window required under the Model By-laws.

On referring to plan No. 3 one finds one has missed the author's point in the previous plan as to the improvement in the dining-rooms, as in this case the position of the w.c. is changed; and therefore the statement that plan No. 3 has the same advantages as No. 2 seems hardly in accord with the actual state of things.

It is only to be anticipated from the description given that plan No. 4 should be welcomed with enthusiasm, as it is said to be "far in advance of anything of its kind that has hitherto been built." This plan, with the following one, which is the "smallest practicable house that can be designed of a certain size," suggests a further description after the author's own particular style, namely, "The Non-continuous Maximum Passageway Dwellings."

It is to be regretted that only six solutions for the planning of the suburban house should be forthcoming, but there must necessarily be a limit, as it is stated "the results cannot be arrived at by any other method of planning," and yet with the last solution the previous efforts are quite surpassed, and it is unnecessary for one to point out the advantages of back bedrooms with no visible means of entrance, while the use of a suitable bathing costume would at once get over a difficulty that might arise with a timid bather by the omission of a door to the bathroom.—Yours truly,

BARKING CREEK.

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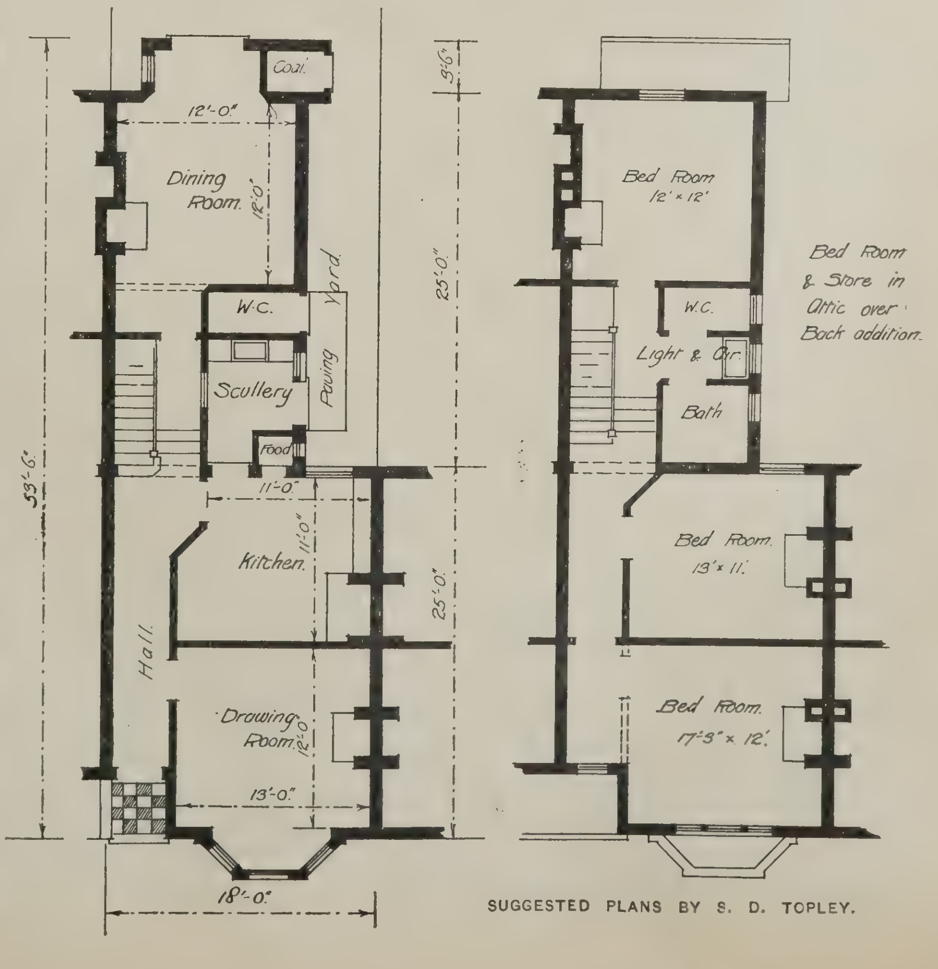
*To the Editor of* The Builders' Journal.

Sir,—As an architect practising in the borough of Croydon I should like to offer my opinion on the general arrangements and appointments of the plans published in your issue for September 16th. The by-laws and regulations of this district (which are the same in most districts around London) are opposed to some of the arrangements shown.



SUGGESTED PLANS BY S. D. TOPLEY.

*Plan No. 1.*—The staircase facing the entrance door is not good. A narrow passage between the staircase and entrance to the drawing- and dining-rooms is only obtainable. An angle fireplace in a dining-room is not liked by everyday tenants. Only a very narrow area is given at the rear of the dining-room window. The kitchen window (corner) of the adjacent house would allow servants to look into the dining-room. The construction of divisional and front walls on the second floor would be very costly and not satisfactory, as bay windows are shown. I presume that the flues shown can be constructed, but they would be a great expense. The w.c. shown on the front elevation is not desirable, as vent and soil pipes must be carried down and up above the roof. Further, a clause in the local by-laws says: "A person who shall erect a new building shall not construct any party-wall of such building so that any opening shall be left in such wall, and a party-wall must be constructed of sufficient thickness, &c., as per height, length, &c., to completely make the two buildings distinct and separate one from another." As to tenants, great difficulty would be found in obtaining a purchaser for one house only. The insurance on such a building would be difficult to obtain, and if secured would be heavy. The rooms would be occupied by different families, and it would be next to impossible to make the walls and floors sound-proof.

*Plan No. 2.*—A narrow and long passage for entrance, where there is not even space for a hall-stand to be placed, is to be deprecated. The dining-room again looks into a long and narrow area. The servants' w.c. door facing the dining-room window is distinctly objectionable. Steps between kitchen and dining-room should be avoided. The bedroom on the second floor does not seem possible with a by-law as follows: "Every person who shall erect a new building and shall construct any room therein so that it may be used for human habitation shall comply with the following requirements:—Attics. If such a room is intended to be used as a sleeping room, and is an attic or a room wholly or partly in the roof of such building, he shall construct such room so that it shall be not less in any part than 5ft. in height, and so that it shall to the extent of two-thirds of the superficial area of the floor be a height of not less than 9ft." With these few items attended to, this should be a very ready house to let and comfortable to occupy.

*Plan No. 3.*—A splendid plan, and I think the best obtainable on such a site; but I believe the bathroom on the second floor would be objected to by most women.

*Plan No. 4.*—The scullery accommodation is very limited, and the w.c. on the landing is objectionable. I see no reason why the bed in the room over the dining-room could not be placed against the opposite wall, and the door put by the stairs: this would allow a linen press to be kept on the landing. The clause in the by-laws relating to ashpits is overlooked. So far as tenants are concerned, the plan is a very good one, but there is a great scarcity of cupboards. Moreover, the bathroom in the roof would be objected to.

*Plan No. 5.*—The staircase opposite the front entrance is objectionable, and I fear four small bedrooms would also be objected to. Landings and passages must be narrow, and it would seem that some of the rooms would have very little furniture in them, as it would be impossible to get in a large-sized wardrobe. The dining-room is very narrow, and a corner fireplace is again indicated. I do not know if the party-walls are shown 14in. or 9in., but I think the following by-law would affect one of these walls up to 25ft. in height: "Where the wall does not exceed 25ft. in height its thickness shall be as follows:—If the wall does not exceed 30ft. in length, and does not comprise more than two storeys, it shall be 9in. thick for its whole height. If the wall exceeds 30ft. in length or comprises more than two storeys, it shall be 13½in. thick below the topmost storey and 9in. thick for the rest of its height."

*Plan No.* 6 is excellent, but its great objection is its depth, and again no cupboard accommodation is shown.

As a whole the plans are instructive, with excellent accommodation. I would observe, however, that the author in several instances has shown independent flues and fireplaces, which is costly, while the draining board to sink is shown on the right-hand side, which has been proved very awkward in use.—Yours truly, FRANK WINDSOR.

*To the Editor of* THE BUILDERS' JOURNAL.

LONDON, W.

SIR,—In reply to Mr. Horder I would say that numerous plans are required to exhaust even an 18ft. frontage, and the plans in question were not published as the only practicable ones, but as the best of their kind, *i.e.*, having the rooms in the same relative position and the same area and accommodation. The question then is, can Mr. Horder or anyone else show a better plan on the same lines?

With regard to party-walls in No. 1 plan, this is a matter of opinion. I contend that these inside walls are not party-walls, and that many flats are of similar construction. If floors are not required to be solid in flats, why should inside vertical walls be objected to? But even this can be regulated in larger frontages, and if termed or regarded as party-walls by any authorities they can be solid and continued from base to roof.

*Plans Nos. 2 and 3.*—My general remarks as to the number and variety of plans in my series answers the questions raised.

*Plan No. 4.*—This again is one of a series of a number of plans in 24ft. frontages. I would be glad to compare a supposed better plan on the same lines.

*Plan No. 5.*—This plan I consider to be the best possible in the frontage and area given.

*Plan No. 6* is intended to have considerable landing space, and on the lines of this plan it does not affect the accommodation and need not to be curtailed or regretted. If I had furnished basement plans, Mr. Horder would have seen that the arrangements for coals, removal and deposit of dust, tradesmen's entrance, &c., had by no means been overlooked. Any ordinary professional man would conclude that such arrangements were intended.

Lastly, in reply to Mr. Horder, let me add that I do not believe there is any plan of an 18ft. frontage of which I have not some knowledge. My forty years' experience has been expended in gaining this information.

With regard to Mr. Topley's remarks I must repeat that my series of plans in 18ft. frontages embraces every practicable design. I selected the two plans illustrated out of the series. With his suggested plans I would suggest a comparison of my own plan having the dining-room in the rear.

I am afraid "Barking Creek" has lost sight of the real question at issue. His remarks with regard to fire and to party-walls in plan No. 1 apply to flats in general, and it is only because his criticism is apparently charged with spleen that he loses sight of the fact that the frontage of these two houses is only 30ft., and that the question is—can a better plan be provided in this frontage and area? In regard to plan No. 2, it could easily be understood that the omission of the window in the w.c. was not intended, and a trellis-work screening the w.c., &c., is not generally shown on a plan. Plan No. 3 seems to be beyond his ability to criticize. He again misses the real point in plan No. 4, and evidently regards sarcasm as criticism, wasting words on what is easily understood by an unprejudiced mind. As to his regret that only six solutions are forthcoming, I should like to say that there are in my series of 18ft. frontages alone more than twenty-five different plans, embracing every practicable arrangement that can be made in this frontage.

In answer to Mr. Windsor's remarks, I am quite conversant with the latest London building regulations and many others, having built nearly one hundred houses, &c., and with the exception of No. 1 plan, which may or may not be considered to comply strictly with some people's interpretation of the intention and provision of the Building Act, I question if any authority would require duplicate party-walls. Considering the construction of flats in general, it would seem peculiarly strange to require a vertical division to be of more importance than a horizontal one.—Yours truly,

GEORGE LAURENCE.

### "Buildings to Measure around Hampstead and Kilburn."

*To the Editor of* THE BUILDERS' JOURNAL.

LONDON, N.W.

SIR,—Your correspondent who enquires for buildings to measure around Hampstead and Kilburn should try Fenton House (otherwise the Clock House), one of the finest examples of its period around London.—Yours truly, E. G.

### Book on Graphic Statics.

*To the Editor of* THE BUILDERS' JOURNAL.

SOUTHPORT.

SIR,—Having on more than one occasion noticed enquiries in your columns for a cheap and reliable book on graphic statics, I would suggest "The Elements of Graphical Arithmetic and Graphical Statics," by Gray & Lowson, published by Collins, Sons & Co., price 3s. 6d.—Yours truly, J. L. M'KAY.

## INCUBATING THE ARCHITECT.

### Mr. Butler Wilson's Opinions.

IN the course of his inaugural address to the Class of Design in the Leeds School of Art, Mr. Butler Wilson, F.R.I.B.A., president of the Leeds and Yorkshire Architectural Society, said he knew of no subject in the whole of the examinations which was better calculated to test the knowledge which the student had gained from the previous subjects than that of design. The R.I.B.A. examiners allocated 350 marks to design out of the total of 1,000 given in the final course, the largest number for any other subject being 125 marks.

The work of the classes would give students a further opportunity of testing their aptitude for the profession of architecture. He had long thought that pupilage should be preceded by some elementary training preparatory to an office career. Many architects who refused to receive pupils as beginners would probably take them if they were well grounded, and in such cases the period of pupilage would obviously be shortened. A year or two spent in a school of architecture should enable a student to acquire at moderate cost the rudiments of his work before learning in an architect's office the practical details of his profession. Pupils were frequently unable to take advantage of the opportunities offered in an architect's office because they had not previously studied the elements of their work; consequently, they only begun to learn something about architecture when their articles terminated.

Continuing, Mr. Butler Wilson said: Ours has been defined as the most difficult of the visual fine arts, yet there is much less labour spent on learning architecture than there is on learning painting and sculpture, although the votaries of these fine arts commonly have more natural aptitude for their calling. We know the painful years students of painting and sculpture devote to getting the ground work of their art, while from three to five years spent in an office, mostly tracing, is thought enough for an architect. Architecture has been said to be the art which so disposes and adorns the edifices raised by man, for whatsoever uses, that the sight of them may contribute to his mental health, power and pleasure. If you are to attain this high standard, you will have to pay the penalty of sacrifice and put forth your greatest strength.

### Full Labour, not Money's Worth, in Buildings.

Is it not true that we are none of us so good architects as to be able to work habitually beneath our strength? And yet there is not a building that I know of, lately raised, wherein it is not sufficiently evident that neither architect nor builder has done his best. It is the special characteristic of modern work. Old work has nearly always been hard work. It may be the hard work of children, of barbarians, of rustics; but it is always their utmost. Ours has as constantly the look of money's worth, of a stopping short wherever and whenever we can, of a lazy compliance with low conditions, never of a fair putting forth of our strength. Let us have done with this kind of work at once; cast off every temptation to it; do not let us degrade ourselves voluntarily, and then mutter and mourn over our shortcomings; let us confess our poverty or our parsimony, but not belie our human intellect.

### Constructional Work and Design.

Mr. F. Musto, A.R.I.B.A., the instructor in architecture at the school, delivered a lecture on "The Study of Architectural Design: Its Necessity and Its Recompense." He remarked that young men starting their profession found no difficulty in taking up constructional work, but somehow he usually ound that beyond that they had not gone. As time went on he trusted they would find hat they were increasingly looking at design and the artistic side of things. One of the great values of examination was that it ormed a distinct object to work for. The ubject of design did not appear in the ntermediate programme at all. He had ad to discourage young men from beginning he study of architectural design because hey had not gone over the preliminary round, but when once they had passed that reliminary ground the sooner young men ot to work on thinking out actual design he better. He advised students to visit ld and new buildings, and in addition o measuring and sketching and analysing, e suggested that they should criticize and um them up, and consider whether they were fully justified in accepting the things hey accepted, or whether it ought not to e possible here and there to improve upon hem.

### A Lady's Complaint.

Alluding to a letter which appeared cently in "The Yorkshire Post" from a dy, he said she complained bitterly that chitects were most horrible people, who ould not provide cupboards and several her things. He thought that lady was erfectly justified in her complaints. An chitect who designed a house that had ot enough cupboards and proper bathroom nd washhouse arrangements, and proper cilities for carrying on household work, ught to become something different from hat he was. Whatever houses that lady d met with, he thought they might assume at they were not designed by an architect all. At any rate, whoever designed these uses could not have known his business to ve her justification for her complaints.

As to the rewards of architects, these were few and far between. The engineer and the contractor, and the secretary and anybody else, could get his name in the papers, and get presented to Royalty, and get honours and baronetcies, but an architect had to live on his own innate appreciation of his art, yet the prospects of a man who had not only studied construction but detail and design work were perceptibly greater than those of a man who had done nothing but constructional and strictly practical work.

## Enquiries Answered.

*The services of a large staff of experts are at the disposal of readers who require information on architectural, constructional or legal matters. Questions should in all cases be addressed to the Editor. The querist's name and address must always be given, not necessarily for publication.*

### Instructors in Technical Schools.

NORWICH.—G. T. writes: "Is it necessary to hold a certificate in order to be an instructor at a technical school, say, for bricklaying, masonry or carpentry?"

No, though certificates are a recommendation as to ability. Very few appointments are secured nowadays without such qualifications.

### Geometry.

HALIFAX.—E. N. W. wires: "Which is the most suitable book on descriptive geometry and the projection of solids for the R.I.B.A. intermediate examination? Both Harrison's and Angel's seem rather unsuitable, as far as one can judge from the questions set in recent examinations."

Rawle's Geometry will serve your purpose.

### Intersection of Mouldings with Jamb.

WOLVERHAMPTON.—V. C. C. writes: "The accompanying tracing (not reproduced) shows the arch and jamb mouldings of a Gothic doorway; part of the former die away on the splayed portion of the latter. Kindly explain the method by which the intersection of the arch mouldings with the splayed jamb can be correctly found in elevation."

By the ordinary method of geometrical projection, explained in all the elementary books on Geometry. Place the plan directly under the elevation, upon which mark the angle of skewback. Project lines up from the mouldings on plan until they meet the angle of skewback, and these will be the points where the mouldings intersect. Project again on to the section arrangedat the side, if exact points are required in this also.

### Furniture Designing as a Profession.

LONDON, N.W.—F. C. O. writes: "What would be the best course of study for me to follow with a view to qualifying for a designer of furniture and general cabinet-work? I have been 4½ years in the architectural profession, and have always had a leaning towards the more ornamental part of the business. What would be the salary of an ordinary assistant and also of an expert in both a small manufacturing furniture and cabinet-maker's office and in a first-class firm?"

Attend Mr. Spooner's classes at the Arts and Crafts School, Regent's Street, W. No books can be recommended on furniture except general ones, such as the published lectures to the Arts and Crafts Exhibition Society by William Morris and others. You had better combine the designing of decorative schemes with furniture designing, and if you are fairly clever you will no doubt succeed. The salary of an ordinary assistant in the studios of the large decorative establishments varies from about £2 to £4 per week, while "experts" or "heads" get anything from £300 to £1,000, and one or two even more.

### A New Roof and Ancient Lights.

DULVERTON.—R. S. T. writes: "The building marked X on the accompanying photograph (not reproduced) is at present being raised in accordance with the drawing. You will see that the new roof will be considerably higher than the window marked 'old light.' Directly in front of the window the roof of the building now under alteration was at or below the level of the sill. Has the owner of the building marked X any right to alter his premises as shown? Could an action for damages be sustained against him if he carried out the work as proposed, in view of the fact that he will thus shut out a most pleasant view of the street and surrounding country, consequently deteriorating the value of the house to which the window belongs?"

No, we do not think it could. The view is not taken into account. The only question considered is whether sufficient light is allowed for the prosecution of the business or occupation. In Scotland there is no law as to rights of light.

### Thicknesses for Glazing.

KIRKCALDY.—QUARTZ writes: "How can one determine the thicknesses for plate glass in shop windows of various sizes to withstand wind-pressure and vibration of heavy vehicular traffic?"

This is one of the very numerous questions to which mathematics cannot be applied in a fully practical and convincing way. If the plate is slightly convex, pressure on the convex side puts the substance in compression, and pressure on the concave side will put it in tension; if it is in parts concave and other parts convex there will be very complicated stresses. But even where the thickness of a plate bears to its area a much larger ratio than is the case with practical plate glass panes, the question of stresses induced by pressure (apart from want of homogeneity of the substance) is an exceedingly difficult one, and it has not been, so far as I am aware, satisfactorily dealt with from what is sometimes called a "theoretical" point of view. I of course assume that the pane bears evenly and properly round its whole margin. As good a supposition as any is to consider a pane when subjected to a tolerably uniform pressure, as from wind, as withstanding a shearing stress round the edge of the supporting frame; in this view the thickness should be proportional to the linear dimensions for similar forms, because the total pressure is proportional to the area and the boundary is proportional to a linear dimension, so that increasing the thickness as the linear dimension will maintain the shearing surface proportional to the total pressure. It is plain that a long narrow pane will be less stressed than a square pane of the same area, because its shearing area (its perimeter) is larger in proportion to the area, and the shorter distance between bearings adds to its strength. Suppose we have a pane of plate glass 10ft. by 10ft.—that is, 100 sq. ft. in area—its marginal length is 40ft.; suppose its thickness to be ·34in., the shearing section is 13·6 sq. in. 40 × ·34 = 13·6 sq. in. Assume 50lbs. per ft. of wind-pressure, the total pressure is 5,000lbs.; this would stress the glass to only 367lbs. per sq. in., or about 10 per cent. of breaking tensile strength. I would therefore take ·34in. to be a safe thickness for panes 10ft. square, so far as wind-pressure is concerned: if my method is correct a pane 20ft. by 20ft., if such sizes are made, should be ·64in. thick; 15ft. by 15ft. ·51in. thick. I have taken a fairly low breaking shearing stress for glass (the tensile strength of glass is given as from 2,500lbs. to 9,000lbs. per sq. in.). The vibration from traffic is not of much consequence; the bottom edge of the pane should rest on something that will give even bedding along its whole length. It is of the utmost importance that no settlement of the building will affect the glass. P.

# Complete List of Contracts Open.

| DATE OF DELIVERY. | WORK TO BE EXECUTED. | FOR WHOM. | FROM WHOM FORMS OF TENDERS MAY BE OBTAINED. |
|---|---|---|---|
| | **BUILDING:** | | |
| Oct. 8 | Bassenthwaite Halls, Keswick—Rebuilding Dwelling-house | T. Ewart | Mr. Fisher, Bassenthwaite Halls, Keswick. |
| " 8 | Midhurst, Sussex—Alterations, &c., to Residence | ——— | W. Buck, Architect, North Street, Horsham. |
| " 8 | Halifax—Extensions | Campbell Gas-engine Co. | Jackson & Fox, 7 Rawson Street, Halifax. |
| " 9 | Walton Creek, Essex—Coastguard Station | Admiralty | Director of Works Dept., 21 Northumberland Av., London, W.C. |
| " 9 | Cwm, near Ebbw Vale, Mon—Five Houses and Shops | ——— | E. N. Johnson, Architect, Risca. |
| " 10 | Barrow-in-Furness—Alterations, &c., to Municipal Buildings | Corporation | Borough Engineer, Barrow-in-Furness. |
| " 10 | Leeds—Wood Annexe | Smithfield Club | F. Mitchell, 9 Upper Fountaine Street, Albion Street, Leeds. |
| " 10 | Manchester—Schools | Education Committee | Clerk, Education Offices, Deansgate, Manchester. |
| " 10 | Seven Sisters, near Neath—Thirty Houses | E. E. Bevan | J. C. Rees, Architect. Neath. |
| " 10 | Shibden, Yorks—House | ——— | J. F. Walsh & G. Nicholas, Architects, Museum Chambers, Halifax. |
| " 10 | West Hartlepool—Three Houses | ——— | F. E. Boaz, York Road, West Hartlepool. |
| " 10 | Manchester—Terra-Cotta | Education Committee | Clerk, Education Offices, Deansgate, Manchester. |
| " 10 | Ballinamallard, Ireland—Business Premises | ——— | T. Elliot, 37 Darlings Street, Enniskillen |
| " 10 | Downpatrick, Ireland—Seven Cottages | Rural District Council | E. Nolan. Council's Engineer, Council Offices, Downpatrick. |
| " 10 | Pontefract—Library | ——— | Garside & Pennington, Architects, Pontefract. |
| " 12 | Margate—Wall | ——— | E. A. Borg, Borough Surveyor, Town Hall, Margate. |
| " 12 | Padiham, Lancs—Widening Bridge | County Council | County Bridgemaster, Preston, Lancs. |
| " 12 | Aberystruth—Classroom, Cloakrooms, &c. | School Board | R. L. Roberts. Board's Architect, Abercarn. |
| " 12 | Mullingar—Ireland - Soldiers' Home | Management Committee | A. E. Joyce, Architect, Mullingar. |
| " 12 | Belfast—Cements. Bricks, &c. | Harbour Commissioners | G. F. L. Giles, Engineer, Harbour Office, Belfast. |
| " 13 | Letterkenny. Ireland—Floors | Donegal Asylum Committee | J. P. M'Grath, Archt., Commercial Bldgs., Foyle St., Londonderry. |
| " 13 | Bethnal Green—Clearing Site | Borough Council | Borough Surveyor, Town Hall, Bethnal Green. |
| " 14 | Kilmarnock—Generating Station | Electricity Committee | R. Blackwood, Burgh Surveyor, Market Bridge, Kilmarnock. |
| " 14 | Swindon—Shops and Sunday School Premises | Wesleyan Methodist Trustees | W. F. Bird, Architect, Midsomer Norton, Somerset. |
| " 14 | Whitehaven—Alterations, &c., to Beerhouse | J. Dalzell's Parton & Harrington Breweries, Ltd. | W. Carmichael, Architect, Barton, Whitehaven. |
| " 14 | Lambeth, S.E.—Repairs, &c., at Relief Station | Guardians | W. Thurnell, Guardians' Office, Brook Stt., Kennington Road, S.E. |
| " 14 | Whitehaven—Alterations, &c., to Hotel | J. Dalzell's Parton & Harrington Breweries, Ltd. | W. Carmichael, Architect, Parton, Whitehaven. |
| " 14 | York—Offices | ——— | W. Bell, Company's Architect, York. |
| " 15 | Greenwich—Depot Buildings | Borough Council | Borough Engineer, Town Hall, Greenwich Road, S.E. |
| " 15 | Greenwich—Underground Convenience | Borough Council | Borough Engineer, Town Hall, Greenwich Road, S.E. |
| " 16 | Hereford—Extension of Post Office | Commissioners of H.M.Works,&c | Secretary, H M. Offices of Works, Storey's Gate, S.W. |
| " 16 | Hull—Thirty-two Dwellings | City Improvements Committee | J. H. Hirst, City Architect, Town Hall, Hull. |
| " 17 | Embleton, Cumberland—Farm Buildings | ——— | E. Jackson, Civil Engineer. Whitehaven. |
| " 17 | Peebles—Gasworks | Town Council | W. Buchan, Town Clerk, Peebles. |
| " 19 | London, N W.—Repairing Shed | Metropolitan Railway Co. | R. H. Selbie, Secretary, 32 Westbourne Terrrace, London, W. |
| " 19 | London, W.—Bricks, &c. | Metropolitan Railway Co. | Company's Storekeeper, Neasden Station, N.W. |
| " 20 | Acton, Middlesex—Engine Shed | Great Western Railway Co. | Engineer, Paddington Station, W. |
| " 22 | Hereford—Shedding | Corporation | J. Parker, City Surveyor, Mansion House. Hereford. |
| " 23 | Portsmouth—School | Education Committee | Rake & Cogswell, Architects, Prudential Buildings, Landport. |
| " 26 | Ilford—Depôt, &c. | Urban District Council | H. Shaw, Council's Surveyor, Town Hall, Ilford. |
| " 27 | Portland, Dorset—Additions, &c., to Police Station | Standing Joint Committee | County Surveyor, Shirehall, Dorchester. |
| | **ENGINEERING:** | | |
| Oct. 8 | Swansea—Cofferdam | Harbour Trustees | A O. Schenk, Engineer, Harbour Offices, Swansea. |
| " 8 | Manchester—Telephone Pipes | Highways, &c., Committee | City Surveyor, Town Hall. Manchester. |
| " 9 | Birkenhead—Electric Wiring | Education Committee | W. Bates, Electrical Engineer, Craven Street. Birkenhead. |
| " 10 | Valencia—Port Works | Committee | Secretaria da la Junta de obras del, puerto de Valencia. |
| " 10 | Withernsea. Hull—Gasholder, &c. | Holderness Gas Co. | J. Holliday, Engineer, Gas Offices, St. Mark's Street. Hull. |
| " 10 | King's Norton, near Birmingham—Electric Tramways | Urban District Council | A. W. Cross, 23 Valentine Road, King's Heath, near Birmingham. |
| " 12 | Bedford—Waterworks | Corporation | Major H. Tulloch, 28 Victoria Street, Westminster. |
| " 12 | Brighouse—Heating, &c. | Parks & Cemeteries Committees | S. S. Haywood, Borough Engineer. Municipal Offices, Brighouse. |
| " 12 | Hamilton, Scotland—Filters, &c. | Waterworks Commissioners | W. R. Copland, 146 West Regent Street, Glasgow. |
| " 12 | Liverpool—Pipelaying | Corporation | Water Engineer, Municipal Buildings, Liverpool. |
| " 12 | Margate—Waterworks | Corporation | A. Latham, 15 Cecil Square, Margate. |
| " 13 | Letterkenny, Ireland—Heating, &c. | Asylum Committee | J. P. M'Grath, Architect, Commercial Bldgs, Foyle St.. Londonderry. |
| " 14 | Larne, Ireland—Kitchen, &c., Appliances | Guardians | S. M. Wallace, Board Room, Union Workhouse. Larne. |
| " 14 | Richmond, Surrey—Sewer Entrance Shafts | Main Sewerage Board | W. Fairley, Board's Engineer, West Hall Road. Kew Gardens. |
| " 14 | Whippingham and North Arreton, I.W.—Waterworks | Rural District Council | H. E. Stratton, Clerk, Council Offices, Pyle Street, Newport, I.W. |
| " 15 | Ipswich—Pilework, &c. | Dock Commissioners | T. Millar, 9 Thoroughfare, Ipswich. |
| " 19 | Salford—Machinery | Tramways Committee | General Manager, 32 Blackfriars Street, Salford. |
| " 19 | Johannesburg—Electrical Plant | Municipal Council | Mordey & Dawbarn. 82 Victoria Street, Westminster, S.W. |
| " 19 | Bristol—Heating and Ventilating Schools | Education Committee | Holbrow & Oaten, 9 Clare Street, Bristol. |
| " 19 | Harrismith, South Africa—Electrical Machinery, &c. | Town Council | Mordey & Dawbarn, 82 Victoria Street, Westminster, S.W. |
| " 19 | Salford—Electric Wiring | Tramways Committee | General Manager, 32 Blackfriars Street, Salford. |
| " 19 | London, W.—Switchboxes, Electric Lighting Sundries, &c. | Metropolitan Railway Co. | Company's Storekeeper, Neasden Station, N.W. |
| " 20 | London, W.—Extension of Boiler-House | Paddington Guardians | F. J. Smith, Architect, Parliament Chambers, Victoria Street, S.W. |
| " 21 | Barmouth—Gasholder | Gas Committee | W. Belton, Engineer, Gasworks, Shrewsbury. |
| " 26 | Harrogate—Iron and Glass Pump-room and Colonnade | ——— | F. Bagshaw, Borough Engineer, Municipal Offices, Harrogate. |
| " 26 | Wolverhampton—Sinking Borehole | Corporation | E. A. B. Woodward. Waterwks Engr., Town Hall, Wolverhampton. |
| " 31 | Swansea—Ducts, &c. | Corporation | C. A. L. Prusmann, Borough Electrical Engineer, Strand, Swansea. |
| " 31 | Swansea—Tramways, &c. | Corporation | J. Thomas, Town Clerk, Guildhall, Swansea. |
| " 30 | Marina, Upper Barracca, Malta—Lift | Crown Agents for the Colonies | Receiver-General and Director of Contracts, Valletta, Malta. |
| " 31 | Tregaron. Wales—Reservoir, &c. | District Council | J. Davis & Son, Engineers, Llanelly. |
| Nov. 2 | Kingsbridge, Devon—Waterworks | Urban District Council | T. W. Latham, Engineer, Council Offices, Kingsbridge. |
| " 2 | Cromer and Mondesley, Norfolk—Railway | Joint Railways Committee | Company's Engineer, King's Cross Railway Station, London, N. |
| " 2 | Perth, Western Australia—Railway Carriages | ——— | Agent-General for Western Australia, 15 Victoria St., Westminster. |
| Dec. 15 | Los Andes, Chili—Railway | ——— | Commercial Intelligence Branch, Board of Trade, 50 Parliament Street, S.W. |
| 1904. | | | |
| Feb. 1 | Cairo—Three Road Bridges over Nile | Ministry of Public Works | Commercial Intelligence Branch, Bd.of Trade. 50 Parliament St., S.W. |
| No date | London, W.C.—Two Boilers | Savoy Hotel Directors | Kincaid, Waller, Manville & Dawson, 29 Gt. George St., Westmnstr. |
| | **FURNITURE:** | | |
| Oct. 10 | Guildford—Furnishing, &c. | Guardians | W. J. Hill, Workhouse, Guildford. |
| | **IRON AND STEEL:** | | |
| Oct. 10 | Bridgend, Wales—Angle Iron, &c. | Ogmore and Garw U.D.C. | S. H. Stockwood, Post Office Chambers, Bridgend. |
| " 12 | Woodford, Essex—Street Lamp Columns | Urban District Council | W. Farrington, Surveyor, Council Offices, Woodford Green. |
| " 12 | Belfast—Iron Castings, Steel Castings, &c. | Harbour Commissioners | G. F. L. Giles, Engineer. Harbour Office, Belfast. |
| " 14 | Richmond, Surrey—Fencing, &c. | Main Sewerage Board | W. Fairley, Board's Engineer, West Hall Road, New Gardens. |
| " 19 | London, W.—Axles, Springs, Steel, &c. | Metropolitan Railway Co. | Company's Storekeeper, Neasden Station, N.W. |
| " 19 | Colchester—Iron Fence | Guardians | C. E. White, 57 North Hill, Colchester. |
| " 21 | Adelaide, South Australia—Railway Stores | ——— | Chief Mechanical Engineer, Islington, South Australia. |
| | **PAINTING AND PLUMBING:** | | |
| Oct. 12 | Birkenhead—Painting, &c., Workhouse | Guardians | J. Carter, 45 Hamilton Square, Birkenhead. |
| " 12 | Leeds - Painting Bridge | Corporation | Clerk, Highways Office, Whitehall Road, Leeds. |
| " 12 | Belfast—Glass, Lead, Oils, Paints, &c. | Harbour Commissioners | G. F. L. Giles, Engineer, Harbour Office, Belfast. |
| " 12 | London, W.—Colours, Paints, Varnishes, Lead, &c. | Metropolitan Railway Co. | Company's Storekeeper, Neasden Station, N.W. |
| | **ROADS AND CARTAGE:** | | |
| Oct. 10 | Manchester—Asphalting | Education Committee | Clerk, Education Offices, Deansgate, Manchester. |
| " 12 | Broadstairs—Steam Rolling, &c. | Urban District Council | H. Hurd, Town Surveyor, Broadstairs. |
| " 12 | Beckenham—Making-up Roads | Urban District Council | J. A. Angell, Surveyor, Council Offices, Beckenham. |
| " 12 | Hanwell—Making-up Roads, &c. | Urban District Council | S. W. Barnes, Srvyr.,Council Offices,Church Rd. West, Hanwell, W. |
| " 12 | Nantymoel & Blaengarw, Wales—Street Works | Ogmore and Garw U.D.C. | H. D. Williams, Surveyor, Council Offices, Blackmill, Bridgend. |
| " 13 | Carshalton—Road Materials, &c. | Urban District Council | W. W. Gale, Council Offices, High Street Carshalton. |
| " 13 | London, N.—Road Works | Hornsey U.D.C. | E. J. Lovegrove, 99 Southwood Lane, Highgate, N |
| " 13 | Willesden—Making Roads, &c. | District Council | O C. Robson, Engineer, Public Offices, Dyne Road, Kilburn. N.W. |
| " 15 | Woolwich—Brooms and 3 Slop Carts | Borough Council | F. Sumner, Borough Engineer, Maxey Road, Plumstead. |
| " 16 | Pontypridd—Road | Urban District Council | R. P. Wilson, 66 Victoria Street, Westminster, S.W. |
| " 16 | Preston, Lancs—Paving, &c | Corporation | Borough Surveyor, Town Hall, Preston. |
| " 19 | London, W.—Brooms, Granite, &c. | Metropolitan Railway Co. | Company's Storekeeper, Neasden Station, N.W. |
| " 19 | Hendon—Granite Kerb, Tar Paving, &c. | Urban District Council | S. S. Grimley, Engineer, Council Offices, Hendon. |

# Complete List of Contracts Open —*continued.*

| DATE OF DELIVERY | | WORK TO BE EXECUTED. | FOR WHOM. | FROM WHOM FORMS OF TENDERS MAY BE OBTAINED. |
|---|---|---|---|---|
| | | **SANITARY:** | | |
| Oct. | 8 | Lyminge, Kent—Emptying Cesspools, &c. | Elham R.D.C. | R. Lonergan, 11 Cheriton Place Folkestone. |
| " | 8 | Cheadle, Staffs—Sewer, &c. | Rural District Council | Clerk, Council Offices, Cheadle. |
| " | 8 | Sunderland—Sewers, &c. | Corporation | Borough Surveyor, Town Hall, Sunderland. |
| " | 9 | Melthum, near Huddersfield—Sewers | Urban District Council | J. B. Abbey & Son, Engineers. New Street, Huddersfield. |
| " | 12 | Belfast—Drain Pipes, &c. | Harbour Commissioners | G. F. L. Giles, Engineer, Harbour Office, Belfast. |
| " | 12 | Basford, Notts—Sewerage Works, &c. | Rural District Council | Elliott & Brown, Engineers, Burton Buildings, Parliament Street, Nottingham. |
| " | 12 | Bridgwater—Sewer, &c. | Rural District Council | W A. Collins, 120 West Street, Bridgwater. |
| " | 12 | Bridgwater—Drainage Works | Rural District Council | W. A. Collins, 120 West Street, Bridgwater. |
| " | 12 | Ilford—Sewers | Urban District Council | H. Shaw, Surveyor, Town Hall, Ilford. |
| " | 12 | Hastings—Sewer, &c. | Corporation | P. H. Palmer, Borough Engineer, Town Hall, Hastings. |
| " | 13 | Ilford—Sewage Works Extension | Urban District Council | H. Shaw, Engineer, Town Hall, Ilford. |
| " | 15 | Croydon—Drain Pipes, &c. | Town Council | Borough Road Surveyor, Town Hall, Croydon. |
| " | 19 | Hendon—Sewer, &c. | Urban District Council | S. S. Grimley, Engineer, Council Offices. Hendon. |
| " | 19 | London, W.—Stoneware Pipes, &c. | Metropolitan Railway Co. | Company's Storekeeper, Neasden Station, N.W. |
| " | 26 | Woodford, Essex—Sewerage and Sewage-Disposal Works | Urban District Council | W. Spinks, 20 Park Row, Leeds. |
| | | **TIMBER:** | | |
| Oct. | 12 | Belfast—Timber | Harbour Commissioners | G. F. L. Giles, Engineer, Harbour Office, Belfast. |
| " | 19 | London, W.—Timber | Metropolitan Railway Co. | Company's Storekeeper, Neasden Station, N.W. |

# List of Competitions Open.

| DATE OF DELIVERY. | | DESIGNS REQUIRED. | AMOUNT OF PREMIUM. | DEPOSIT REQUIRED FOR CONDITIONS, &c. | BY WHOM ADVERTISED. |
|---|---|---|---|---|---|
| Oct. | 12 | Rawtenstall—Free Library, &c. | £100, £50, £30. | £2. | A. W. Lawson, Borough Surveyor, Municipal Offices, Rawtenstall. |
| " | 26 | Harrogate—Iron & Glass Pump-room & Colonnade | —— | £1 | F. Bagshaw, Borough Engineer, Municipal Office, Harrogate. |
| Nov. | 14 | Tamworth—Public Library | £20, £10, £5 | —— | J. Matthews, Town Clerk, Bolebridge Street, Tamworth. |
| " | 21 | Sunderland—Additions & Alterations to Town Hall | £100, £50, £25. | £5. | J. W. Moncur, Borough Engineer, Town Hall, Sunderland. |
| Dec. | 1 | Wakefield—Reconstruction of Cattle Market | £52 10s., £26 5s. | £2. | E. R. Langhorne, Clerk to Governors of Charities, Wakefield. |
| 1904 Mar. | 31 | Vienna—Machinery to Lift Boats on Canal | 100,000, 75,000 & 50,000 kronen. | —— | Austro-Hungarian Consulate-General, 22 Laurence Pountney Lane, E.C |
| No date | | Liverpool—Cotton Exchange | —— | £2 2s. | P. Brown, Secretary, Liverpool Cotton Association, Ltd., 50 Brown's Buildings, Liverpool. |
| " | | Glasgow—Branch Library | —— | —— | J. D. Marwick, Town Clerk, City Chambers, Glasgow. |

# Current Market Prices

### FORAGE.

| | | £ | s. | d. | £ | s. | d. |
|---|---|---|---|---|---|---|---|
| Beans | per qr. | 1 | 14 | 0 | 2 | 0 | 0 |
| Clover, best | per load | 4 | 5 | 0 | 4 | 10 | 0 |
| Hay, best | do. | 3 | 0 | 0 | 4 | 0 | 0 |
| Sainfoin mixture | do. | 3 | 15 | 0 | 4 | 5 | 0 |
| Straw | do. | 1 | 10 | 0 | 2 | 0 | 0 |

### OILS AND PAINTS.

| | | £ | s. | d. | £ | s. | d. |
|---|---|---|---|---|---|---|---|
| Castor Oil, French | pet cwt. | 1 | 0 | 5 | — | | |
| Colza Oil, English | do. | 1 | 3 | 6 | — | | |
| Copperas | per ton | 2 | 0 | 0 | — | | |
| Lard Oil | per cwt. | 2 | 15 | 0 | 2 | 17 | 0 |
| Lead white, ground, carbonate | do. | 1 | 4 | 10 | — | | |
| Do red | do. | 1 | 0 | 4½ | | | |
| Linseed Oil, barrels | do. | 0 | 18 | 6 | — | | |
| Petroleum, American | per gal. | 0 | 0 | 6 | 0 | 0 | 6⅛ |
| Do. Russian | do. | 0 | 0 | 4⅝ | 0 | 0 | 4⅛ |
| Pitch | per barrel | 0 | 8 | 0 | — | | |
| Shellac, orange | per cwt | 9 | 7 | 6 | 9 | 10 | 0 |
| Soda, crystals | per ton | 3 | 2 | 6 | 3 | 5 | 0 |
| Tallow, Town | per cwt. | 1 | 6 | 3 | 1 | 6 | 6 |
| Tar, Stockholm | per barrel | 0 | 19 | 6 | — | | |
| Turpentine | per cwt. | 2 | 3 | 3 | — | | |

### METALS.

| | | £ | s. | d. | £ | s. | d. |
|---|---|---|---|---|---|---|---|
| Copper, sheet, strong | per ton | 71 | 0 | 0 | — | | |
| Iron, Staffs., bar | do. | 6 | 5 | 0 | 6 | 10 | 0 |
| Iron, Galvanised Corrugated sheet | per ton | 11 | 0 | 0 | 11 | 5 | 0 |
| Lead, pig, Soft Foreign | do. | 11 | 1 | 3 | — | | |
| Do. do. English common brands | do. | 11 | 7 | 6 | — | | |
| Do. sheet English 3lb. per sq. ft and upwards | do. | 14 | 0 | 0 | — | | |
| Do. pipe | do. | 15 | 0 | 0 | — | | |
| Nails, cut clasp, 3in to 6in. | do. | 9 | 5 | 0 | — | | |
| Do. floor brads | do. | 9 | 0 | 0 | — | | |
| Steel, Staffs., Girders and Angles | do. | 5 | 15 | 0 | 7 | 2 | 6 |
| Do. do. Mild bars | do. | 6 | 7 | 6 | 7 | 2 | 6 |
| Tin, Foreign | do. | 115 | 5 | 0 | 115 | 15 | 0 |
| Do. English ingots | do. | 119 | 0 | 0 | — | | |
| Zinc, sheets, Silesian | do. | 23 | 10 | 0 | - | | |
| Do. do. Vielle Montaigne | do. | 23 | 15 | 0 | — | | |
| Do. Spelter | do. | 20 | 15 | 0 | 21 | 0 | 0 |

### TIMBER.

SOFT WOODS.

| | | £ | s. | d. | £ | s. | d. |
|---|---|---|---|---|---|---|---|
| Fir, Dantzic and Memel | per load | 1 | 13 | 0 | 3 | 0 | 0 |
| Pine, Quebec, Yellow | do. | 5 | 5 | 0 | 6 | 5 | 0 |
| Do. Pitch | do. | 2 | 12 | 0 | 3 | 3 | 0 |
| Laths, log, Dantzic | per fath. | 4 | 10 | 0 | 5 | 10 | 0 |
| Do. St. Petersburg | do. | 7 | 5 | 0 | — | | |
| Deals, Montreal, Bright, 1st Yellow Pine, 3×12 to 20 | do. | 30 | 0 | 0 | — | | |
| Do. do. do. do. 3×11 | do. | 30 | 0 | 0 | — | | |
| Do. Quebec and Rimouski, Unsorted Bright Spruce, 3×11 | do. | 9 | 5 | 0 | — | | |
| Do. do. do. 3×10 | do. | 9 | 5 | 0 | — | | |
| Deals, Quebec and Rimouski, Unsorted Bright Spruce, 3×9 | per fath. | 9 | 10 | 0 | — | | |
| Do. do. do. 3×8 | do. | 8 | 10 | 0 | — | | |
| Do. do. do. 3×7 | do. | 8 | 0 | 0 | — | | |
| Do. do. Yellow Pine, 2nd, 3×11 | do. | 15 | 10 | 0 | — | | |
| Do. do. do. do. 4×10 | do. | 16 | 10 | 0 | — | | |
| Do. do. do. do. 3×9 | do. | 14 | 0 | 0 | — | | |
| Do. Halifax, Spruce, 1st, 1st, 3×9 | do. | 8 | 15 | 0 | — | | |
| Do. do. do. 2nd, 3×9 | do. | 8 | 15 | 0 | — | | |
| Do. do. do. 3rd, 3×9 | do. | 8 | 15 | 0 | — | | |
| Do. Galatz, White, 1st, 3×11 | do. | 8 | 0 | 0 | — | | |
| Do. do. do. 2nd, 3×11 | do. | 7 | 10 | 0 | — | | |
| Do. Raumo, Yellow, Unsorted, 3×9 | do. | 9 | 15 | 0 | — | | |
| Do. Archangel, White, dry. 1st, 3×9 | do. | 12 | 15 | 0 | — | | |
| Do. do. do. 2nd, 3×11 | do. | 12 | 0 | 0 | — | | |
| Do. do. do. do. 3×11 | do. | 11 | 15 | 0 | — | | |
| Do. do. do. do. 3×11 | do. | 10 | 5 | 0 | — | | |
| Do. do. do. do. 3×11 | do. | 12 | 0 | 0 | — | | |
| Do. do. do. do. 3×9 | do. | 12 | 0 | 0 | — | | |
| Do. do. do. do. 3×9 | do. | 9 | 10 | 0 | — | | |
| Do. Gefle, Inferior Yell., 5th, 2½×9 | do. | 6 | 15 | 0 | — | | |
| Do. Sandvik, Yellow, 3rd, 3×9 | do. | 8 | 15 | 0 | — | | |
| Battens, all kinds | do. | 8 | 5 | 0 | 13 | 1 | 0 |
| Flooring Boards 1in. prepared, 1st | per square | 0 | 10 | 3 | — | | |

*Guaranteed Gearing*

ROBERT ADAMS,
65 & 67, Newington Causeway, LONDON, S.E.

The Originator and Leading Maker of the Modern System of Ventilating Gearing.

HIGHEST AWARDS AT PARIS, 1900.

"ADAMS' SPECIAL CONTINUOUS GEARING"

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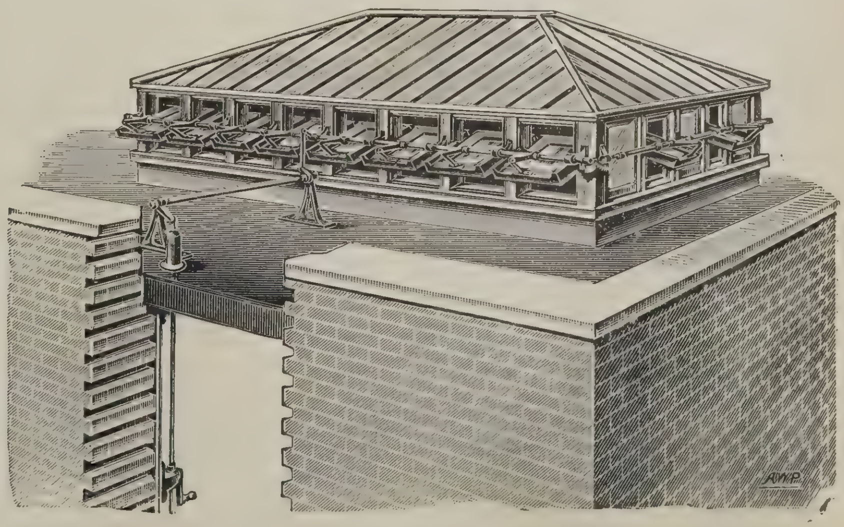

**Advertisement Aphorism for the Week.**

*Give us the honour of introducing you to the people we meet.*

## Appointments Wanted.

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ARCHITECT'S JUNIOR ASSISTANT requires an engagement in the Midlands.—Apply Box 2580, BUILDERS' JOURNAL Office, 9, East Harding Street, Fetter Lane, E.C.

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ENGINE DRIVER requires Berth. Can do all repairs. Has had seven years' workshop experience. Highest references.—C. B., 1, Petley Road, Hammersmith.

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WOOD CARVER.—WANTED, a good MAN, accustomed to carving church figures and heads.—Apply, with specimens of work, to GILBERT SEALE, 22, George Street, Camberwell Road, London.

WORKING FOREMAN BRICKLAYER. Wanted, Smart Man for job in S. London. Must be good manager of men in own trade, and thoroughly practical.—State age, experience, references, and wages to G. P., 8, Chesterton Road, Notting Hill, W.

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FOR DISPOSAL, as a going concern, through retirement of present proprietor, an old-established BUILDER and CONTRACTORS' BUSINESS, which has been in present hands over 40 years. Improving market town and railway centre, where houses are in demand and building trade is brisk. Reliable staff of workmen, convenient premises, and good connection. A fine opportunity for an energetic man who knows his business. No goodwill is asked. Stock and plant at valuation.—Apply to JOSEPH COLLINGWOOD, Business Transfer Agent, Exchange Buildings, March.

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# THE BUILDERS' JOURNAL.

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**After 4 LINES, 6d. per LINE.**

Write your "Want" Advertisement on this form and send it to 9, East Harding Street, E.C., with Postal Order for 3/-.

**NOTE.—5 o'clock p.m. Monday is the latest time for receiving "Want" Advertisements. Office: 9, East Harding Street, Fetter Lane, E.C.**

# Bankruptcies.

[Abbreviations: R.O.—receiving order; P.E.—public examination; C.C.—county court; O.R.—official receiver; Adj.—Adjudication.]

DURING THE WEEK ending Oct. 2nd seventeen failures in the building and timber trades in England and Wales were gazetted.

J. VERDON, builder, Radlett. R.O. and adj. Sept. 21st.

F. J. E. HINE, wallpaper merchant, London, S.E. P.E., Bankruptcy Court, Nov. 12th, at 11.30.

F. G. TEBBUTT, builders' merchant, Hastings. R.O. Sept. 24th.

F. FANTA, engineer, High Holborn. R.O. Sept. 25th. First meeting, Bankruptcy Court, Oct. 9th, at 11. P.E., same, Nov. 12th, at 11.30.

E. W. MESSITER, builder, London, W. Adj. Sept. 21st. First meeting. Bankruptcy Court, Oct. 8th, at 11. P.E., same, Oct. 23rd, at 11.30.

J. MAUGHAN, builder, Seaton Sluice. R.O. Sept. 23rd. P.E., Newcastle-on-Tyne C.C., Oct. 22nd, at 11.

E. BARNES, builder and contractor, Longton. R.O. and adj. Sept. 25th.

D. J. EVANS, builder, Aberystwyth. P.E., Town Hall, Aberystwyth, Oct. 9th, at 10.30.

T. WILLIAMS, electrical engineer, Llandaff, R.O. Sept. 21st.

W. G. LEE, builder, Folkestone. Liabilities £365; assets £215; deficiency £150.

C. TAYLOR & SON, builders, Moss Side, Manchester. Liabilities £2,933; assets £140; deficiency £2,793.

A. BOOK, builder, Liverpool and Colwyn Bay. Gross liabillties £20,783; deficiency £1,932.

T. GLOVER, builder and decorator, Eastbourne. Gross liabilities £9,623; £3,617 expected to rank for dividend; assets £1,823; deficiency £3,617.

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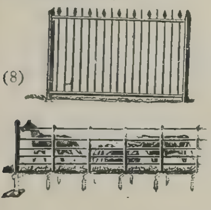

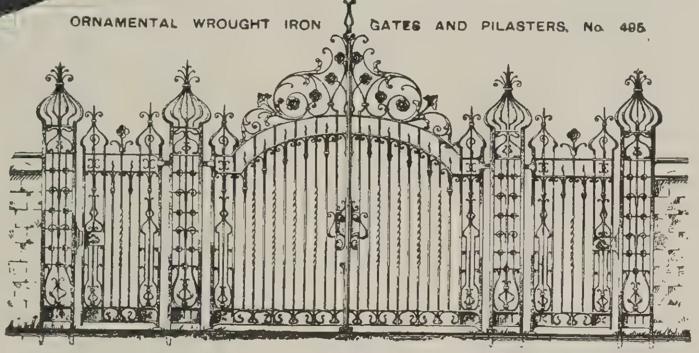

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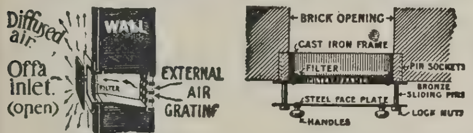

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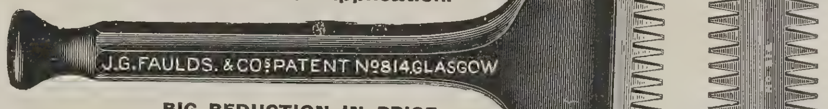

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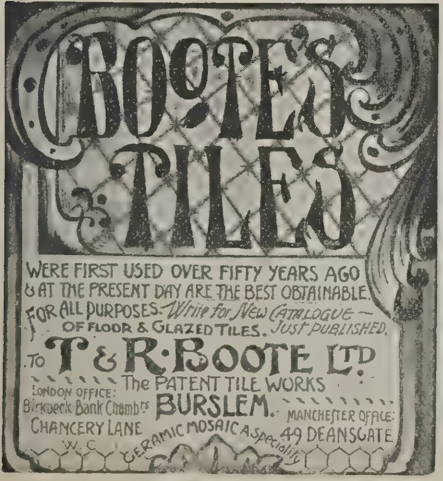
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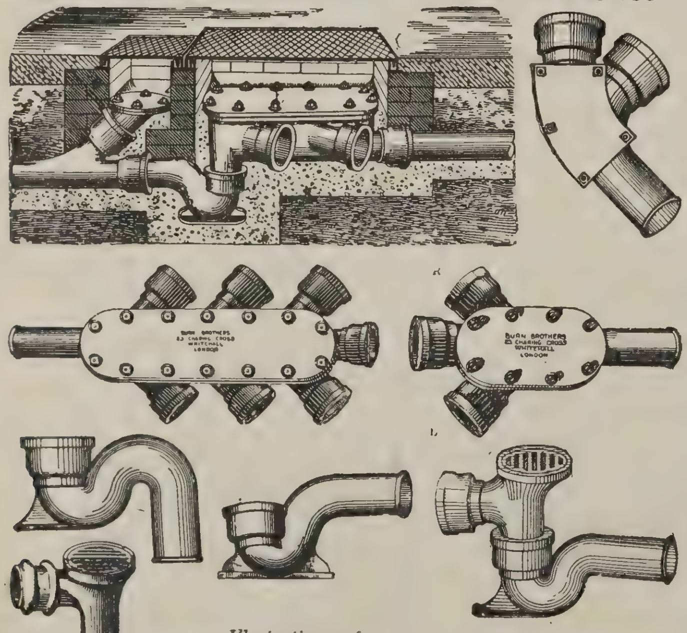

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THE

# BUILDERS' JOURNAL

AND ARCHITECTURAL RECORD.

October 14, 1903. Vol. 18, No. 453. 9, East Harding Street, E C.

## Summary.

In his inaugural address to the School of Architecture at University College, Professor Simpson said that to have built the many-storeyed buildings of Rome with the lintel of the Greeks would have been extremely difficult, if not impossible. The Romans were therefore forced to adopt the arch, while the ready supply of cement enabled them to use concrete far more extensively than was done before or has been done since. Speaking of Santa Sophia, he said it was the most truly original and its interior the most beautiful architectural creation in the world. The development of groining and the substitution of the clustered pier for the cylindrical column were also most interesting phases of architectural evolution. (Page 142.)

Builders paid nearly £10,000 as compensation to workmen last year. (Page 151.)

In order to obtain the general feeling of architects on the subject of registration, Mr. J. W. Beaumont, president of the Manchester Society of Architects, invited the opinion of the various societies in this country, and out of 12 from which he received replies 6 were in favour of it, 1 against, 2 divided in opinion, and 3 had not discussed the question. The Manchester Society has already pronounced in favour of registration. Speaking of the new School of Architecture in Manchester, Mr. Beaumont said he believed it would become one of the foremost centres in the kingdom for the instruction of architectural students. (Page 147.)

The carpenters' strike in Pretoria is over, and the men's demand for a standard wage of £6 16s. per week of forty-eight hours has been agreed to. (Page 146.)

Students of the Architectural Association of Ireland have not given very much support to the R.I.B.A. examinations. It is now proposed that they shall qualify for membership of the Royal Institute of the Architects of Ireland by passing a preliminary examination. Mr. Charles H. Ashworth referred to the matter in his presidential address to the A.A. of Ireland last week. He said he hoped their own examination would be more popular with the students than the R.I.B.A. examination had been, because instead of having to work in a lonely way they would have the friendly emulation of their fellows in Ireland to cheer them on. (Page 146.)

The Russian Government gives preference to home manufacturers, even if their prices are 15 per cent. higher than foreign contractors. (Page 149.)

Twenty-three receiving orders and orders of administration were made last year against architects and surveyors; 458 builders failed during the year. (Page 151.)

A valuable article on Scientific Masonry—the setting-out of a circle on circle arch—appears on page 152, and a new edition of Purchase's excellent book on "Practical Masonry" is reviewed on page 148.

**The late Mr. Brewer.** By the death of Mr. H. W. Brewer we lose an architectural draughtsman of great distinction. We can always find pleasure in him merely as a technical artist, but, in, addition, his work embodies a deep architectural knowledge and a peculiarly intuitive perception. Mr. Brewer took crude drawings and prints of old buildings, he examined existing fragments, he closely studied all that was to be found about them in documents and books; and then he set the whole creation before us in his wonderful drawings. We are apt to think of him only as a line draughtsman, but in wash work he was equally a master: one of the most beautiful architectural drawings we ever saw was his interior of Toledo Cathedral, with shafts of light striking through the clearstory windows, exhibited at South Kensington about three years ago. Mr. Brewer was the son of the late Prof. J. Sherrin Brewer, the historian. He was born at Oxford in 1836, and was educated at Norwich and King's College, London. His art studies were directed by G. C. Stansfeld and William Warren, and in 1862 he first exhibited at the Royal Academy. Among the important commissions which Mr. Brewer carried out was one given him by Queen Victoria, for whom he executed a number of water-colour paintings of Frogmore Mausoleum.

**Only an English Cathedral.** OUR attention has been called to what the Dean and Chapter of Norwich are doing, or allowing to be done. Mr. Walter Rye furnishes the facts. Around the Lower Precinct there is a massive flint wall. It is probably six hundred years old. Now a great length of it is being pulled down and a row of red-brick villas is being built. Apparently there are to be six of them, and they will provide the Dean and Chapter with an additional ground rent of £7 10s. a year; for which sum the houses are allowed to be in the foreground of the cathedral. The Dean is a vice-president of the local archæological society, but he has seen fit to cement over a piece of the interesting flint house in which he lives, close to the south door of the cathedral, while the precinct wall opposite St. Helen's Hospital is still used by the Dean's tenant as an advertising station. Also a corrugated iron fence still abuts on the west front of the cathedral. Finally, whether with the Dean's permission or not, there is a cast-iron urinal next to the Erpingham Gate. It is disgraceful that the Dean and Chapter should have allowed such barbarisms. Cathedral towns are proverbially dead-alive. But business has still to be done and modern requirements have to be satisfied. This does not mean, however, that a fragment of architecture which has weathered five centuries is to be disfigured because some pork-butcher wants to advertise himself. Mediæval cathedrals may have been clustered round with houses, but they were not pork shops; and there were no desirable villas, or advertising boards, or corrugated iron fences, or cast-iron urinals in those days.

**District Surveyors' Fees.** SOME months ago a firm of London solicitors, Messrs. Quayle & Ouvry, received a notice from the L.C.C. that the porch of a house in the West End belonging to a client of theirs was in a dangerous condition. Repairs were at once carried out at a cost of £7 10s. Soon afterwards the district surveyor applied for his fees in the matter, £1 16s. 3d., which were paid. A week ago—that is, four months after the event—Messrs. Quayle received an application from the County Council for another surveyor's fee, £1 2s. 6d., and also for fees payable to the Council, 6s. 3d.; coupled with the intimation that unless paid within seven days proceedings would be taken. The fees altogether amounted to nearly half what the repairs cost, and it is to this fact that Messrs. Quayle now draw attention. In reply, Mr. Henry Lovegrove, hon. secretary of the District Surveyors' Association, says there were not two surveyors. In the first instance the surveyor's fee of £1 2s. 6d. was for reporting on the dangerous portico to the Council, and then when the repairs were finished he became entitled to the fee of £1 16s. 3d. for seeing that the work had been properly done. Mr. Lovegrove claims that for a man of experience, qualified by examination, these fees are not excessive. For our own part we think they are, however much in accordance with the Act they may be. It is no argument that lawyers do very little for £2 18s. 9d.—lawyers were always overpaid.

**The German in Glass.** MISS SARAH PURSER recently gave an informal exhibition of the work of the stained-glass industry which she started last January in Dublin. The industry, which has been self-supporting from the beginning, was formed with the intention of finding a new outlet for Irish artistic effort and also with the intention of competing with the large quantity of German stained glass, often of a very inferior quality, which is imported annually into Roman Catholic Ireland. Her present artists were obtained from a well-known English firm, but she hopes to make the studio a training ground for Irish craftsmen. The work of this Dublin industry has a style of its own, and a Celtic note runs through all its schemes of decoration.

# ARCHITECTURAL EVOLUTION.

By **Prof. F. M. SIMPSON, F.R.I.B.A.**

On Wednesday last Prof. F. M. Simpson, F.R.I.B.A., delivered his inaugural address to the School of Architecture at University College, London. Mr. Aston Webb, R.A., presided.

Before commencing his address Prof. Simpson made a few remarks about the work of the chair to which he has recently been appointed.

The chair was founded in 1840, and is therefore the oldest chair of architecture in England. T. L. Donaldson was the first professor, and his memory is kept green in the college by the annual presentation of the silver medals which bear his name; Hayter Lewis was the second; and the third was Roger Smith. "Those who knew Prof. Roger Smith will bear me out when I say," said Prof. Simpson, "that his kind heart and lovable disposition made him many friends. He was ever willing to give his time to younger men who came to him for advice, and his ripe experience was always at their service. My acquaintance with him, although slight, commenced many years ago, shortly after he was appointed to this chair. Recently I had occasion to see him two or three times on a certain matter, and nothing could exceed his courtesy and kindness. His death will, I feel certain, be keenly felt by the many who during his long tenure of the chair had the good fortune to be his students."

Continuing, Prof. Simpson said:—Prof. Roger Smith, like his predecessor, confined himself chiefly to lectures arranged for students whose work in the daytime in offices left them only a few spare hours for outside study. No other course, doubtless, was possible in the days when the pupilage system was the only method by which men could study to be architects. But architectural education, like education in other subjects, is undergoing a change. The pupilage system will continue, but it seems probable that it will continue in a modified form. It will continue because only in an office can men get thoroughly in touch with actual practical problems and learn the inner mysteries of their profession; it will probably be modified because the feeling is growing that to enable a student to reap the full benefit from the work placed before him in an office a preliminary training is necessary. Lectures after office hours are unsatisfactory for many reasons. Moreover, in any systematic course of study for our profession—and I think I may say for any other also—interest centres not in the lecture room, but in the studio, laboratory or classroom, as the case may be. Lectures in any course of study of a practical character are but interludes; they have their value, but they require supplementing so much that to make any course of real value a student's whole time has to be devoted to it.

The council and faculties of this college have realised the necessity for a more systematic course of training for architectural students than has been regarded as possible in the past. I believe with them that the time is ripe for a departure from former methods, and I also believe that before many years have run university courses in architecture will be as general in England as they are now in America and in some of our colonies.

Architectural evolution is not merely a matter of academic interest. It has its practical side which is of value to all architects. To trace the working of a man's mind in his work; to see how, ever observing the requirements of his time and adapting himself to his materials, he took an idea from here and an inspiration from there, and so treated them as to give them new expression—is in itself excellent practice for all who are called upon to design. As a historical study it is the most fascinating of any. That all styles, from the earliest days of Egypt to the time of the great Renaissance of the fifteenth century, form an unbroken sequence, few will deny. A few links here and there may be missing in the chain, especially in the earlier work, owing to the lapse of years, but these are becoming fewer and fewer daily.

In a short paper like this it is impossible to mention every instance or to trace every step. All that can be done is to illustrate the truth of the contention by reference now to an individual building, now to a group of buildings, and now to some constructive point which had considerable bearing on the development of a style. Other instances doubtless will occur to many of you of like importance which might with equal fitness have been given.

Of the many factors which determined architectural development in different countries and at different periods, climate, religion, the nature of buildings, the materials available and the state of the labour market may be regarded as the most important. All these exercised their influence in turn. Rome, with its teeming population enclosed within its walls, a population which demanded not only houses to live in but also vast public palaces for their recreation and amusement, required buildings very different from those of simpler Athens. To have built these, many storeys in height as most of them were, with the lintel of the Greeks would have been an extremely difficult if not an impossible task. The Romans, therefore, would have been forced into using the arch, even if they had not early acquired a taste for it from the work of their neighbours the Etruscans. But the arch by itself would not have been sufficient to overcome all the difficulties they had to contend with in the erection of a huge building such as the Colosseum, if it had not been that in the neighbourhood of the city there existed ingredients which formed a remarkably strong cement. This enabled them to use concrete to a far greater extent than had been done before or has been possible since. For the mixing of the concrete and its employment for walls and vaults unskilled labour was all that was required.

The Greek temple with its small naos and external peristyle was eminently appropriate in a country where the people lived much out of doors, and where public worship was performed outside and not inside the building; but when Christianity became general the services demanded a different type of building even in countries where the climatic conditions were much the same as those of Greece. The changes which were made are well illustrated in the present cathedral of Syracuse, which is one instance out of many of the conversion of a temple into a church. A wall was built between the columns of the external peristyle, so that the ambulatory became the aisles; openings were pierced in the naos wall to connect the aisles with the nave, and a chancel was built out at the east end. The entrance was reversed and the posticum of the temple became the porch of the church. When new churches were built the idea for these was taken from the colonnaded timber-roofed basilicas of ancient Rome. In the early days of Christianity money was scarce and workmen as a rule unskilled, and the basilican plan and methods of construction provided the largest possible floor-space for the congregation at the lowest possible cost. Moreover, after the time of Constantine old marble columns to divide the nave from the aisles were to be had almost for the asking from the ruins of the secular buildings of the great city, and by their aid a decorative effect could be obtained without much expense.

In claiming that all architecture is evolved from previous efforts, one is merely reiterating the old truism that nothing comes out of nothing. The contention does not rob an artist of his claim to originality. It merely emphasizes the fact that true originality—the originality that produces lasting good, and is not merely a passing fashion—is the outcome of knowledge. This knowledge may be either traditional, as in the days when the secrets of a man's craft were handed down from father to son for generations, or it may be acquired by study, as was the case with Brunelleschi, Bramante and other great early masters of the Renaissance. An architect of the present day has to conform to much the same requirements and to work with much the same materials as the myriads of his predecessors. All that he can do is to try and advance one step further than they have. Behind him is a vast store of accumulated treasure, and if he can extract from it a few grains and mould them so that he infuses into them his own spirit, his own individuality, he has done as much as anybody can expect to do. What is "art nouveau" is seldom true art, and what is true art is never entirely new.

To say that Anthemius of Tralles learnt much from his Greek and Roman predecessors is not to detract one iota from his reputation. To hint the opposite is only to suggest a doubt as to his sanity. In his beautiful detail the inspiration drawn from ancient Greek mouldings and carvings is so undoubted that even if the connecting links were lost—which is far from being the case, as the work in Syria of the fourth and fifth centuries shows—the similarity between the two is proof enough.

Not quite so apparent at first, but really quite as great, is the connection between the plan and construction of his great church, Santa Sophia, Constantinople, and a Roman building such as the Basilica of Constantine. In both buildings the supports are few, and consist of two great piers on each side which separate the nave from the aisles and mark the three compartments of the central area. The side buttressing to resist the thrusts is similar in both; and each building has or had a screen of columns between the great piers which served to support the galleries, and at the same time to give scale to the building. The screens in the church still remain and form one of its most beautiful features: those of the basilica have long since disappeared. Where the church differs principally from the basilica is in the plan of the ends of the central area, and in the substitution of the dome for the intersecting vault. Each bay of the basilica is square, and all three are equal. In the church the central bay alone is square, the ends are semi-circular, and opening out of each big semi-circle are colonnaded niches. The double-apse arrangement is a Roman device. One of the large halls in the Baths of Diocletian, Rome, has an apse at each end the full width of the hall, and a similar plan was also followed in many of the entrance vestibules to buildings, such as the baptistery of Constantine and the tomb of Constantia. The idea of the colonnaded niches is also Roman, if the restorations of the baths of Gallienus, of the third century, are correct. Even if they are not, S. Sophia is not the earliest Byzantine building in which they occur. They form the most characteristic feature of the interior of some of the circular and multangular churches of the period; of these S. Sergius, Constantinople, San Lorenzo, Milan, and S. Vitale, Ravenna, were commenced before the old church of S. Sophia was burnt, and consequently before the design for the new one was made. But although the idea was old the application of it was new. The plan of the central nave of S. Sophia is as though one of these circular buildings had been cut in half and one-half tacked on to each end of a central square.

The result is a noble hall which for about 220ft. has an average width of over 100ft. No other building of architectural pretensions in the world, not even St. Peter's, Rome, has an unencumbered floor space so wide for such a length. Anthemius showed his genius to a still greater extent in his treatment of the ceiling. He took the circular dome of the East, which from the early days of Assyrian art, many centuries before Christ, had ever been a feature there, and by the aid of pendentives placed it over the great central square, high above the transverse and longitudinal arches.

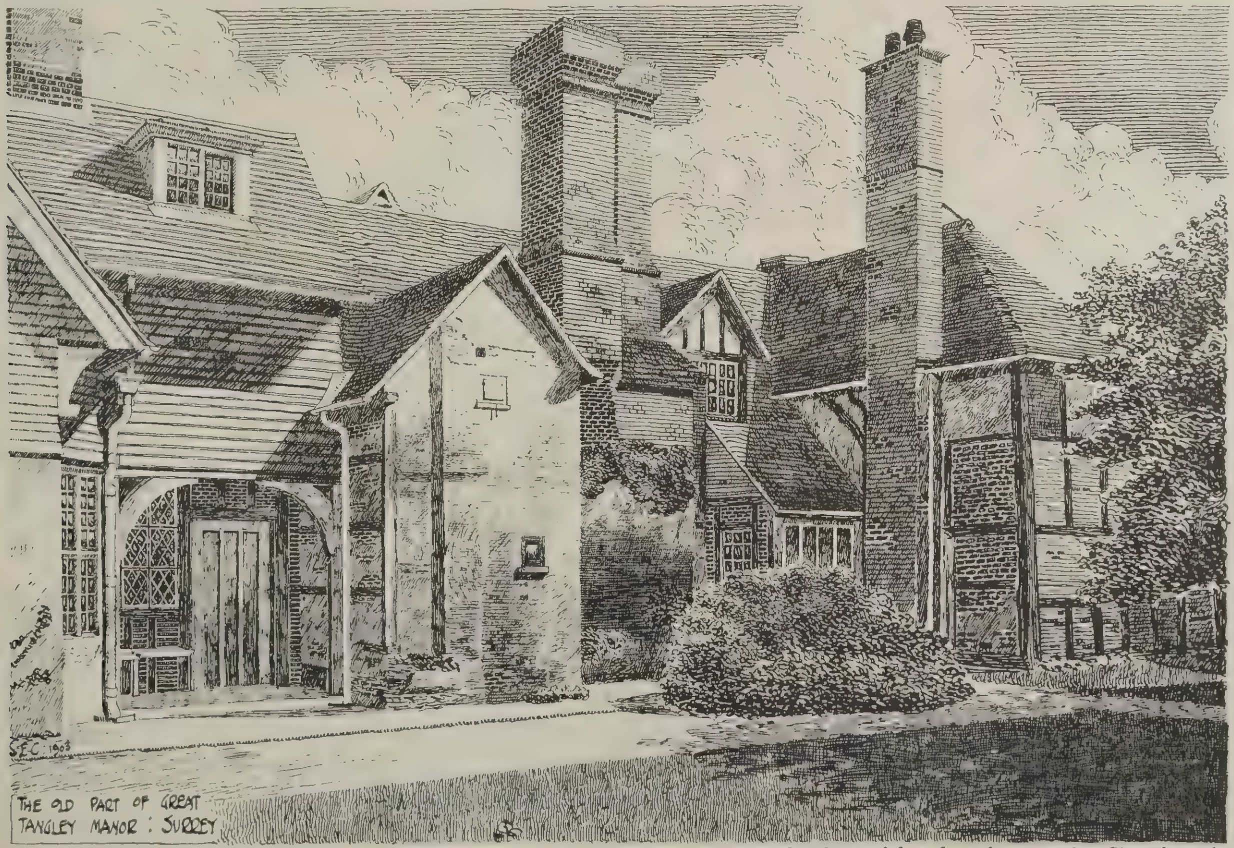
This was a wonderful achievement, not because of the mere span of the dome—that of the Pantheon is nearly half as wide again—not because a circular dome had never before been placed over a square by the aid of pendentives—examples exist in the East as early as the second or third century—but because no dome approaching in size that of S. Sophia had ever before been raised in that manner. The nearest approach to it is the 80ft. dome which covered San Lorenzo, Milan, but in this example it is doubtful if the space below was ever other than octagon.

I have dwelt at some length on S. Sophia because it is not only a standing example, and a great one, of the truth of evolution in design, but it is also the most truly original and at the same time, in my opinion, so far as the interior certainly is concerned, the most beautiful architectural creation in the world. It is a proof of the extent of Anthemius's originality that he could combine Eastern with Western traditions and yet produce so great a masterpiece.

One of the most interesting chapters on architectural evolution is that which deals with the development of groining and the substitution of the clustered pier for the cylindrical column. The two must be considered together—they are inseparable. In the basilican churches the intersecting vault which played so important a part in the large buildings of Imperial Rome finds no place. It occurs occasionally in early work in a few small churches in some parts of Italy, but it was not until the eleventh century was well advanced that it became general in large ones. Basilican churches have timber roofs, which as a rule are ceiled on the underside—the fifteenth- and sixteenth-century flat coffered ceilings at present in many of these churches probably took the place of earlier ones of similar design. These ceilings are continued without a break from east to west. In the church of S. Miniato, Florence, however, built at the commencement of the eleventh century, the timber roof over the nave is broken in its length into bays by means of transverse arches thrown across from pier to pier, with corresponding arches across the aisles. Whether these arches were introduced in the first instance because it was found by experience that the lofty, and not over thick, nave walls required lateral abutment, or because the builders had come to regard an unbroken ceiling as monotonous and unsatisfactory in appearance, is uncertain. The fact remains that about the time mentioned they began to be used, and consequently S. Miniato and one or two other churches of the same period may be regarded as the connecting links between the earlier church with its unbroken timber roof and the later church which was divided into bays, each bay being vaulted.

The vaults themselves were at first constructed much in the same way as the Roman vaults, without transverse arches, except that they were not so massive and heavy. The first alteration was the addition of transverse arches and forming the vaulting into bays. This innovation, slight though it appears at first, led to important changes. Diagonal ribs were next introduced under the groins—or points of intersection of the vault - and these together with the transverse arches formed a skeleton on which rested the severeys, or compartments of the vault. The vault now became a groined and ribbed vault, which required specially designed piers to support its different parts. The cylindrical column was ill-adapted for the purpose, although it is true that in some of the finest of the mediæval churches in France it continued to be used a century after the principle of vault supports had been perfected. The clustered pier therefore took its place. Piers, oblong and square in plan, had, it is true, been used occasionally in certain places in some basilican churches before this, but for the development of the complicated clustered plan from these more simple forms vaulting is entirely responsible. The change commenced with the introduction of transverse arches. In the small church of S. Eustache, Milan, of the ninth or tenth century, in which arches span the aisles but not the nave, the piers are not oblong but T-shaped, and the arches start from the nibs at the back of the piers and from corresponding pilasters on the aisle walls. When arches spanned the nave as well as the aisles the piers became cruciform. In S. Miniato, Florence, those that support the transverse arches are quatrefoil in section. This form, or the cruciform, was satisfactory so long as only transverse and longitudinal arches were employed, but as soon as diagonal ribs were introduced it became insufficient, and shafts had to be inserted in the four internal angles of the cross to support them. In the nave of S. Ambrozio, Milan, built in the second half of the eleventh century, the system is complete and every rib and arch has its corresponding member in the pier.

The buildings of the eleventh and twelfth centuries throughout Europe are heavy in appearance and massive in all their parts, but as the workmen grew more skilled the work became much lighter. Nowhere is the change so conspicuous as in the vaulting and in the size and form of the piers. It was soon discovered that there was no necessity to carry the groining shafts down to the floor, and that they were better corbelled out from the wall, as they then offered more resistance to the thrust of the vault. Sometimes the corbelling is just above the piers, as in Exeter and Lincoln cathedrals; sometimes it is at the level of the string-course above the arches of the arcade, as at Carlisle; and sometimes higher up still, above the triforium, as at Salisbury and Wells. In consequence of this change the piers could be made more slender, and beautiful forms such as are to be seen in


S.E.C. 1903
THE OLD PART OF GREAT TANGLEY MANOR : SURREY

[Tangley Manor, Surrey, is about one mile north-east from Wonersh. It is built of brick and timber, and dates from the year 1582. Since then it has been added to at various times, in a very tasteful manner. The drawing reproduced above is by Mr Sidney E. Castle.]

Exeter Cathedral and in other churches of the fourteenth century were the result. Other modifications all tended in the direction of lightness. As the number of ribs of the vault increased, instead of attempting to provide a separate skewback and separate support for each—which in England would have been impossible in late work owing to their number—the builders brought them together to a common springing, and the *tas-de-charge*, with its many advantages, was produced. In France the architects, as a rule, even as late as the end of the fifteenth century, clung to the simple and dignified quadripartite vault, in which only transverse arches and diagonal ribs are employed. In England, however, they departed from it, and multiplied the ribs to such an extent that the vault became a network of ribs, so close together that little room was left for any filling in. As soon as this point was reached the reason for the construction followed for so long disappeared, and the workmen said to one another, "Why form a skeleton and fill in afterwards? Why not build both rib and filling-in together?" Thus was born the fan-vault—an English design pure and simple, and a logical outcome of the multiplication of ribs—in which both moulded rib and panel are worked on the same stone.

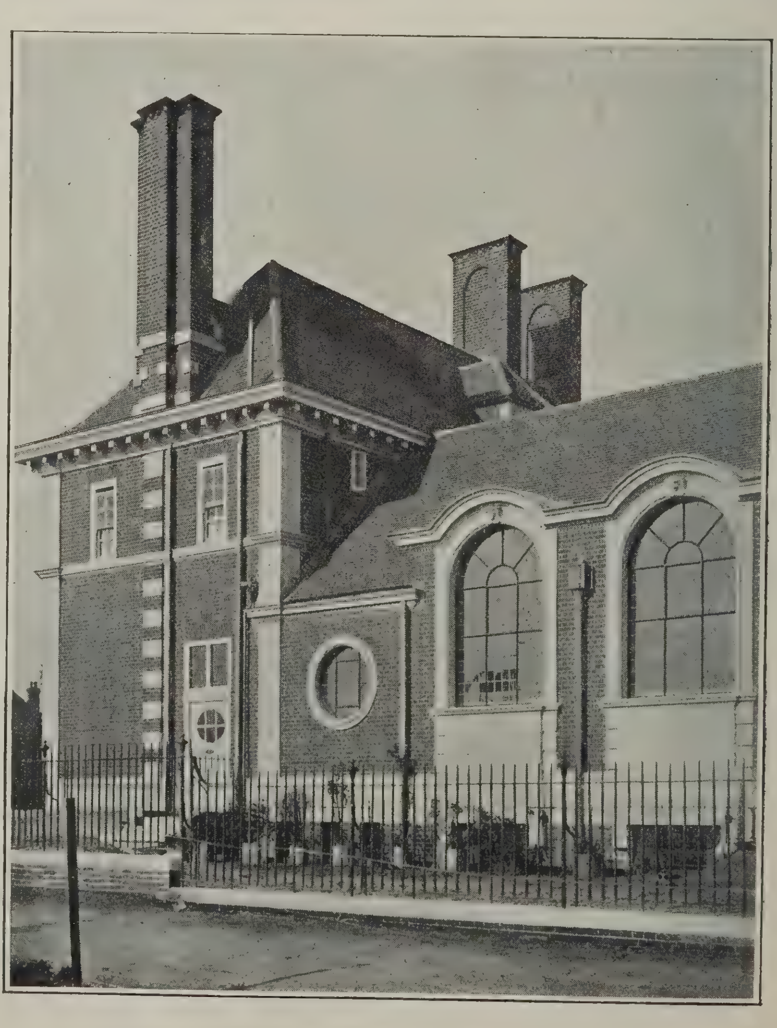
I have taken groining as an illustration because it is the most characteristic feature of mediæval architecture, but a similar sequence of development is just as noticable in other parts of a building. I might have shown, for instance, how the design for the blind arcading on walls changed its character until the large windows of the fourteenth century left little wall-space on which arcading could be placed, and how, as the windows became more and more like panels pierced for light, what wall-space remained was covered with sunk panelling to such an extent that in some churches, especially in those which retain their old stained glass, it it often somewhat difficult to tell at a glance which is wall and which is window.

The shock of the Renaissance, which first fell in Italy at the commencement of the fifteenth century, was a shock which the builders there richly deserved. In England it came a hundred years later, partly because the traditions of mediæval art were far stronger here than in Italy, and partly because the revival of letters had not yet taken a strong hold in this country. The great men of the Italian Renaissance, in seeking for inspiration from the ruins of ancient Rome, did a grand thing for architecture. They felt that the old art was moribund and needed strong measures to bring it back to life. They had no qualms about taking hints from their predecessors of centuries before: from the men who built so sturdily, if somewhat roughly, and on so noble a scale. They felt that in the old buildings there was a virility that was deathless. The more they studied them the more they became imbued with their spirit. And in this absorbing process they lost none of their own individuality. They sacrificed nothing to archæological correctness. They never allowed tradition to interfere with utility. They abandoned none of their building science—science which had been accumulating for centuries; in fact, they added to their store. No one can say that Brunelleschi's dome in Florence is a copy of anything which had gone before. Its construction is different, its form different, and its detail. Sansovino's Library in Venice, although reminiscent of the Colosseum, only shows what can be done by a man with fine ideas and rich imagination who is also a student of architecture. Peruzzi's charming Palazzo Massinni in Rome—a gem which stands alone amongst the colour-washed palaces of the city—has a refinement which no ancient Roman building possesses, and shows that the Greeks had not taught in vain the value of simplicity and the full beauty of the lintel. These men picked up anew the thread of Classic traditions, which, although entangled for centuries with other threads, had never been entirely lost in Italy. Their work, although not coming in natural sequence like the Byzantine, Romanesque and Gothic, has still a place in the history of architectural evolution. It was not so much a renaissance as a recovery.

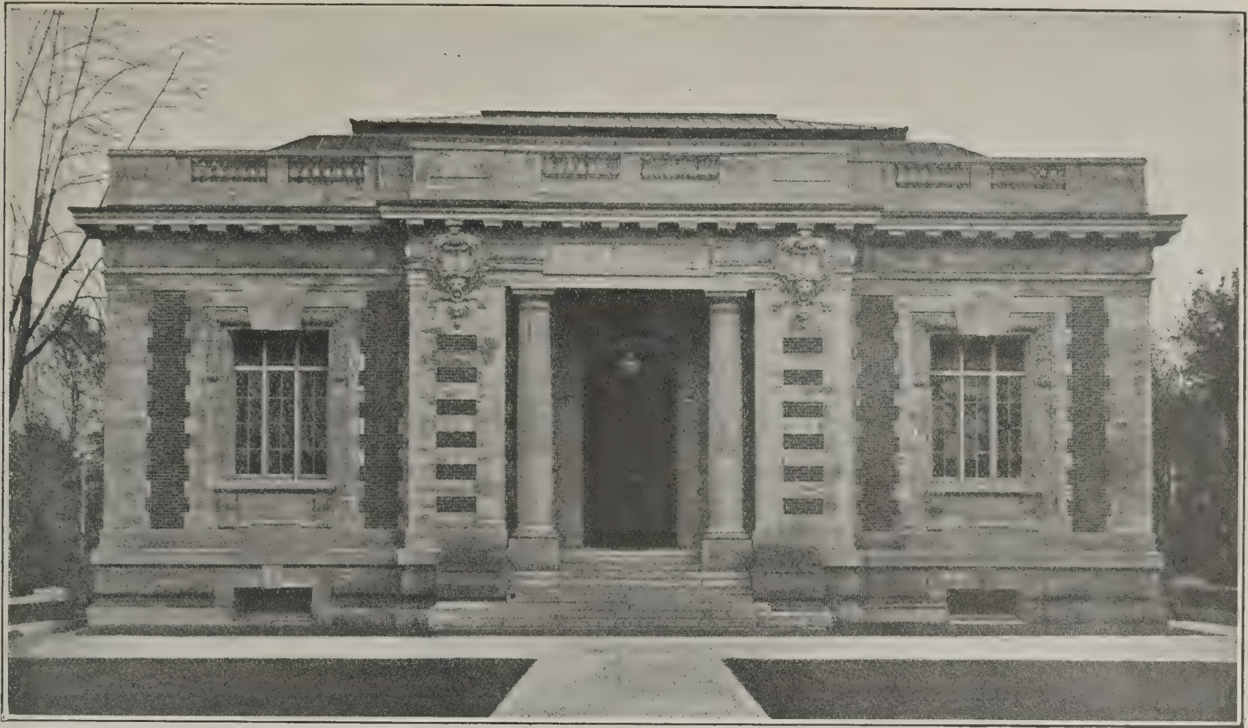
What chance have we to-day of a similar recovery in England? The conditions which exist here now are not so far different from those which prevailed in Italy in the fifteenth century. It is true that the fine traditions, started by Inigo Jones and continued by Wren and his followers, were all destroyed by the two revivals of the last century, but we still have their buildings almost as fresh as ever. The lapse of years since they were built is trifling compared with that which separates the early days of the Italian Renaissance from the time of the Roman emperors. The threads ought not to be so difficult to pick up. In fact, one may fairly say, when one considers much of the work of the last ten or fifteen years, that this has already been accomplished. How long, however, shall we continue to hold them? When one remembers the see-saw of the last half of the century just passed, he would be a bold man indeed who would venture to prophesy. And yet agreement amongst architects is absolutely essential if our art is to progress as it should progress. No art can advance satisfactorily when its exponents are pulling in different directions. Such a state of things is bad for architects, and worse still for workmen, as they are called upon to work in one manner one day and in another the next. Is it to be wondered at that under the circumstances they so often fail to take an interest in what they do? It is unsatisfactory also for the general public, who, seeing no standard, are apt to believe that there is no art.

For a real advance, harmony between architect, builder and client is essential. It existed in the eighteenth century in England; it existed in the fifteenth century in Italy; it is the secret of the strides made by architecture in the Middle Ages. It is true that in one sense the old war of the styles is now over. It is true that men are no longer eager to cut one another's throats over the rival merits of two phases of architecture, or to dispute with each other regarding the correctness of the curve of a moulding. But is it peace? There are still two camps. There are still Classicists, although they are no longer pedants, and there are still Romanticists, although they have ceased to be mock-mediæval. A fusion between the two, if it be possible, although it would take time, would be worth some waiting for. Some years must elapse before one can be expected to lie down with the other. But as the Classicist gets a little more playful and the Romanticist a little more formal the two may meet. After all, the principles underlying good work are much the same in whatever language they are expressed, and the differences perhaps are not so great as appears on the surface.

In the last century men fell into the evil of a too literal rendering of old work, but that is no reason for going to the other extreme and ignoring it altogether. It seems to me that the folly is quite as great to refuse to profit by the successes and failures of the past as it is to remain indifferent to and ignore new developments in building science. The masters of the Renaissance succeeded because although they studied old work they did not copy, it. They blended its essence with the requirements of the time and so produced new art. As they worked, so might we. What is wanted is a basis from which to



LIBRARY, KINGSTON-ON-THAMES. ALFRED COX, ARCHITECT.



CASE MEMORIAL LIBRARY, AUBURN, N.Y. CARRÈRE AND HASTINGS, ARCHITECTS.

start; something that the weaker can fall back upon and the stronger advance from. And if there can only be agreement as to what that basis should be, there is every chance that the end of the century will see a traditional vernacular style once more flourishing in England, and that another chapter will be added to the history of architectural evolution.

# Bricks and Mortar.

**Aphorism for the Week.**

*Truly, the red lion sculptured on the doorway of the barbarian, or the combat figured on his tomb, is more in conformity with the principles of Art than is the statue of the Emperor Constantine in the vestibule of a Christian church.*—VIOLLET-LE-DUC.

**Our Plates.** WE are able to give this week another example of current work by an eminent firm of architects in America. The Case Memorial Library at Auburn, N.Y., by Messrs. Carrère and Hastings, is typical of modern training in America, where the schools have been modelled on the classic lines of the great Paris école. It is a refined building and well proportioned; the detail around the entrance and the windows is very academic. It is an unpretentious, dignified and solid-looking library. —Mr. Alfred Cox's library at Kingston, which has quite recently been finished, offers an interesting comparison. Here, again, the design is based on Renaissance models, but it is English Renaissance, not French. The building is of red brick with stone dressings, and red tiles on the roof; inside it is treated most effectively with light-wood reading slopes, tables and other fittings.—The Gare d'Orleans in Paris is in striking contrast to both the American and English work. No new building in the French capital is more characteristically French in its treatment. Outside, the roof is notable for its lead-work; inside, it is a network of steel lattice and glass. This will never be blackened by smoke, for the trains are brought into the terminus by electric traction. M. Laloux was the designer-in-chief. Subordinate to him were MM. Lemaresquier and Mayeux. The sculpture-decoration is the work of MM. Kulikowski.

**Roman Silchester.** DURING the recent annual excavations carried out by the Society of Antiquaries on the site of the ancient Roman city of Silchester an interesting disclosure, and one of the most important since the uncovering of the Forum and Basilica many years ago, has been made in the opening up of the remains of the magnificent public baths, which give proof of the comfort and luxury enjoyed by the Romans there. The baths are situated on the south-east of the Forum, and, with their heating chambers and various apartments, cover an extensive area. In number and arrangement the several heating chambers are very similar to the modern Turkish bath. The systematic exploration of Silchester was begun about twelve years ago, and will be completed in three or four years. The city was built in square blocks, which can be traced when the corn is standing, and the excavations are carried out block by block, the remains being found a few feet from the surface. After they have been laid bare, planned and photographed, they are covered up again for preservation, as the frost and rain would very soon disintegrate the foundations, and break up the tessellated floors if they were left exposed. This year, in addition to numerous other discoveries, an uninscribed altar, very much burned, and some interesting architectural fragments have been unearthed.

**Old Stoke Newington.** IN a lecture on "Old Stoke Newington" which he delivered at the Town Hall, the Rev. Prebendary Shelford, M.A., said that at the time when the place first got its name the inhabitants found it necessary to erect barricades about their habitations in order to protect themselves from the wild beasts which roamed in the north of London, and what was first called the new village within the stocks was afterwards known as Stoke Newington. The old Roman road was the same one over which their trams now ran to "Manor House" and extended right on to Hertfordshire. Among ancient houses in the parish, they had an hostelry at the corner of Church Street known as the "Falcon." This house went back to the time when the knights, sheriffs and city gentlemen were wont to ride with the hounds over Houndsditch and go hunting over North London. The "Falcon" was one of the most ancient houses in the place. At the corner of Albion Road there was another old hotel, known as the "Rose and Crown." The emblem which surmounted the doorway was intended to mark the union of the houses of York and Lancaster at the close of the Wars of the Roses.

**The Deposit of Plans.** IN the annual report of the Sheffield Society of Architects and Surveyors attention is called to the case of the Corporation of Harrogate against Dickinson, in which the decision of Mr. Justice Wright on February 20th last turned upon the construction of a clause in the Harrogate Corporation Act, 1893, section 27: "The deposit with the Corporation of any plan of any street or building shall be null and void if the execution of the work specified in such plan be not commenced within the following periods . . . as to plans deposited after the passing of this Act within three years of date of such deposit . . . and at the expiration of these respective periods fresh notices and deposits shall, unless the Corporation otherwise determine, be requisite." This is almost identical with section 73 of the Sheffield Corporation Act, 1880, and hitherto it has been the practice of the Sheffield Corporation to allow the erection of part of the buildings shown on any plan as being a commencement within the meaning of this section, so that if more than three years had expired it would be possible to complete the remaining buildings shown on the plan without the re-deposit of future plans. "The result of this decision is most important to the architects and building public of the city, as, acting upon it, the Sheffield Corporation may require fresh sets of plans to be deposited in cases where only a portion has been commenced." The membership of the Society is now 109, and the accounts show a balance in hand of £32. Mr. T. Winder, A.M.I.C.E., is the president for the current session and Mr. E. Holmes, A.M.I.C.E., the vice-president.

## A.A. OF IRELAND.

### President's Address.

IN his inaugural address to the Architectural Association of Ireland last week, the president, Mr. Charles H. Ashworth, M.R.I.A.I., took the history of the Association as his subject. He said it was started in 1896 by a small band of enthusiasts, who, feeling dissatisfied with the lack of architectural intercourse which then existed, conceived the happy idea of reviving the Association which had existed thirty years before. At the present time they had 130 members on the roll. They had made very considerable progress with their work in all its branches. They had established on what he hoped was a firm footing their several classes, technical demonstrations, lectures and visits to works in progress. Indeed, if they went on as they had, it might be possible some day to answer in the affirmative the very serious question, "Is a school of national architecture possible in Ireland?" It had been said that if such a school were possible, it would only be in the direction of ecclesiastical work. He regretted the goal was so narrow, not that he would argue any limit to the range of Church work or discourage any student from the careful and earnest study of ecclesiastical architecture. Happy was the lot of an architect to whom circumstances and opportunity had been kind in this respect, enabling him to devote a lifetime to the highest art of his profession.

It was quite true they had not in Ireland the facilities for study which were offered elsewhere, neither had they the numerous examples of work to guide their thoughts, nor that keenness of competition and emulation which acted as a spur to their more fortunate friends on the other side; but, on the other hand, they had many facilities for study which would carry them on their way if they only used them as they should.

Their Committee were doing their best to make the syllabus of their classes and lectures attractive. One of their competitions had certainly the virtue of novelty to recommend it, in so far as there was no age limit, and it was the first time their students had been asked to make a model of what they design. He hoped to compete for this prize himself.

### Admission to Membership of R.I.A.I.

He now came to the question which at present was deeply interesting to them, namely, the important subject of qualifying examinations prior to admission to membership of the Royal Institute of Architects of Ireland. He need not go into the history of this important movement, for it was of such recent birth that it was familiar to them all; suffice it to say—and it spoke well for the increasing interest in their work exhibited by the younger members—that when the project was recently brought before them at one of their general meetings it received the unqualified and unanimous support of those present. This vote of approval placed them in a strong position to approach the Council of the Royal Institute of Architects of Ireland. The support hitherto given by their students to the examinations of the Royal Institute of British Architects was not quite what they could desire, nor did they see any prospect of improvement in that respect. On the other hand, they had every reason to hope that their own examination would be more popular with the students, because they would not as hitherto have to work in a lonely isolated way, but would have the friendly emulation of their fellows in Ireland to cheer them on.

It might be possible a misapprehension existed among some of the members of the profession that the mere passing of these examinations was intended to provide the student with the hall-mark of an architect. Nothing could be more mistaken. The sole object was to raise the status of the architectural student in Ireland—to protect the bona-fide architect from the pilferings of unqualified persons, who, under existing conditions, bodly flaunted their names on brass-plates or otherwise as practitioners in all the branches of the profession of an architect without the slightest qualifications for the work.

The committees of the two bodies had drawn up a very satisfactory report, embodying a comprehensive scheme, and this was approved by a general meeting of the Institute. It now remained for the Committee to discuss the details and arrange for the working of the scheme. It would not be an easy task, but he was confident in the hope of a successful issue to a movement which must have the greatest influence in the advancement of architectural study in Ireland.

## Builders' Notes.

**The new Police Buildings at Llanfairfechan** have been supplied by Messrs. E. H. Shorland & Brother, of Manchester, with their patent Manchester grates.

**The New York Building Strike** is likely to be extended throughout the United States by the executive committee of the International Bridge and Structural Ironworkers Union.

**French National Roads.**—France possesses 231 national roads, measuring together 37,982 kilometres in length. The longest road, that from Paris to Vintimille, is of 886 kilometres; the next in length stretches between Paris and the Spanish frontier—857 kilometres.

**Fireproof Floors.**—The Columbian Fireproofing Co., Ltd., of 37, King William Street, E.C., are executing the steelwork, fireproof floors, gallery and landings required for Chilworth Manor, Hants (Messrs. Colson, Farrow & Nisbett, architects), and the constructional steelwork and fireproof construction for the large mansion of Hursley Park, Winchester (Mr. A. Marshall Mackenzie, A.R.S.A., architect).

**Street Improvements at Bradford.**—Lieut.-Colonel W. H. Wellsted, M.I.C.E., of Hull, recently sat at Bradford as sole umpire to determine the price to be paid to Messrs. Hameyer and others in respect of their interest as owners of certain property in Church Bank, Bradford, for the purpose of widening Church Bank. The claim was £1,929. The Corporation offered £457. Decision was reserved.

**Land Treatment of Sewage.**—At the recent provincial sessional meeting of the Sanitary Institute held at Birmingham University, Prof. Bostock Hill read a paper in which he pointed out that in the two modern methods of sewage-disposal—land treatment and bacterial purification—the underlying principles were the same. Bacterial systems had arisen through a proper understanding of Nature's methods in dealing with waste matters in the soil. Good results were only possible in land treatment when land suitable in quality and ample in quantity could be obtained. An important advance had been made by the utilization of bacteriological methods in connection with land treatment instead of employing precipitation, as was formerly done. The selection of a system depended upon the particular circumstances in each case. Success at one place was no guarantee of success in another. Mr. J. Edward Willcox (Birmingham) contributed a paper in which stress was also laid upon the impossibility of successfully treating all kinds of sewage by similar methods.

**Building in Glasgow.**—The annual statement as to the work done during the past year by the Glasgow Dean of Guild Court shows that although the total valuation of the linings granted did not come up to that of the previous year, which constituted a record, the past year's linings are the next highest. For the previous year the valuation of the linings amounted to £2,549,698, while for the year which has just been completed the valuations amount to £2,260,773. Of the dwelling-houses passed, no fewer than 765 are of one apartment, being again an increase on previous years; and 2,117 are of two apartments.

**The Scaffolding around the Tower of Big Ben** now being used for its renovation is described as Messrs. Mowlem's "greatest triumph in scaffold building." The scaffold is about one-third of the whole height of the tower—300ft. About 250 pitch-pine poles, every one tested for stability, have been used in the structure, each measuring 24ft. and weighing 2 cwt. on the average, or an aggregate of 25 tons. The poles have been put up vertically and horizontally, and on the horizontal poles about a dozen platforms have been erected at equal distances, the planks forming them being 3in. thick, the weight of the timber used being about equal to the weight of the poles. The poles and the planks were lifted from the ground to the top of the tower by means of a wire rope, worked by a capstan fixed above the clock dials. The time occupied in raising each pole or plank was five minutes. The minaret, with its rose and shamrock ornamentation, will be in the hands of skilled artizans and decorators for at least three months.

**Labour in the Colonies.**—The October circulars of the Emigrants' Information Office give the present prospects of emigration. Work has been plentiful in Canada in all branches of labour during this year, but it is too late in the season for the ordinary emigrant to go out now unless he goes to friends, or has sufficient means to keep him during the winter. Good rains have fallen in New South Wales, but it will be some time before the state can recover from the recent drought. There is a fair demand at Young for stonemasons, carpenters, bricklayers and smiths. In Victoria the effects of the drought continue, and there is no demand for labour. The building trade at Melbourne is slack and there is no demand for mechanics. In South Australia there are great numbers of unemployed among artizans and labouring classes generally. In Queensland there is no demand; but in certain parts of Western Australia building trade workmen are wanted. The last reports from New Zealand show that nearly every trade is well employed; there is, however, a good opening for skilled carpenters, bricklayers, painters, plumbers, &c. In Cape Colony mechanics, if they are really skilled workers, have good chances of employment, but there is no opening for half-trained men. The best demand is for carpenters, bricklayers, masons, painters, plumbers and wiremen. Bricklayers' labourers are coloured men. In Natal the building trades continue busy, and there is a demand for good workmen. Permits are still required by those proceeding to the Transvaal; they are not issued in this country, but must be applied for at the Permit Office at the port in South Africa where the emigrant lands. The building trades have become slacker, and there is a fair demand only for carpenters, bricklayers, stonemasons (wallers and cutters), plumbers and plasterers, but they must be expert; there is no demand for engineers, fitters, turners, brass finishers or moulders, painters or decorators. The carpenters' strike at Pretoria is over, and the men's demand for a standard wage of £6 16s. per week of forty-eight hours has been conceded, at all events as regards competent men. In the Orange River Colony there is a fluctuating demand for good carpenters, masons, fitters and painters. The cost of living is very high. Permits are necessary, as in the case of the Transvaal.

## MANCHESTER SOCIETY OF ARCHITECTS.

### Mr. Beaumont's Presidential Address.

MR. J. W. BEAUMONT, president of the Manchester Society of Architects, delivered his inaugural address last Thursday. He said he looked forward to the time when architectural societies would become so important in large towns that they would be consulted by the public authorities in cases of proposed improvements or new streets. It would never be possible for a public body to say that the buildings in an important street should all be carved out of a certain design, nor that a certain architect should be appointed to carry out all the buildings in such a street; nor would this be desirable. Variety of street architecture was, to his mind, much better than uniformity. Each building generally had its own use, and should by its architecture express the purpose for which it was erected. It would be absurd to confine the elevation of a street to one architectural design, where one building might be used as shop premises, another as a set of offices or chambers, and another as a warehouse. But it would be held that some control should be exercised to see that proper and suitable heights were maintained and that the materials used harmonized with neighbouring buildings.

One thing he wished to impress on his hearers was that more control should be exercised by public bodies in seeing that all new buildings were erected in such a manner as to minimize the risk of fire.

### Registration.

Several subjects of great importance had received a large amount of attention during the last twelve months, and the greatest of these was the question of the statutory registration of qualified architects. The time was at hand when architects would have to make up their minds on this question. In order to ascertain the general feeling on the subject he had invited the opinion of the various societies in different parts of the country, and out of twelve from which he had received replies, six were in favour of registration, one against, two were divided in opinion, and three had not discussed the question. The Manchester Society had already pronounced in favour of registration. Of course, as was the case in other professions, no form of registration would suffice to suppress "quacks," but it would enable the public to discriminate between qualified and unqualified architects. It would also be an advantage to a man to employ an architect who was legally qualified, and against whom he would have legal redress in case of neglect or incompetence.

As to education, Mr. Beaumont said it was important that architectural students should pass all the examinations of the Royal Institute of British Architects, and not simply the first and second. In this connection, he referred to the establishment of a School of Architecture in Manchester. He was glad that this school had been established. The time of apprenticeship might perhaps be shortened for those who had passed through the school, but nothing in the shape of theoretical or academic training would enable a student to dispense with the practical training of an architect's office. He believed that this Manchester School of Architecture would become, under the care of Mr. S. H. Capper, one of the foremost centres in the kingdom for the instruction of architectural students.

Mr. Alfred Darbyshire moved the vote of thanks to the president for his address, and Professor Capper, in seconding it, gave the result of his experience of the working of a registration law in the province of Quebec. Some of the results were not exactly what one would wish. One was to flood the profession with unqualified men, because every person who had had a sign-plate with "architect" upon it had to be admitted as a qualified architect. Of course time would cure such an evil.

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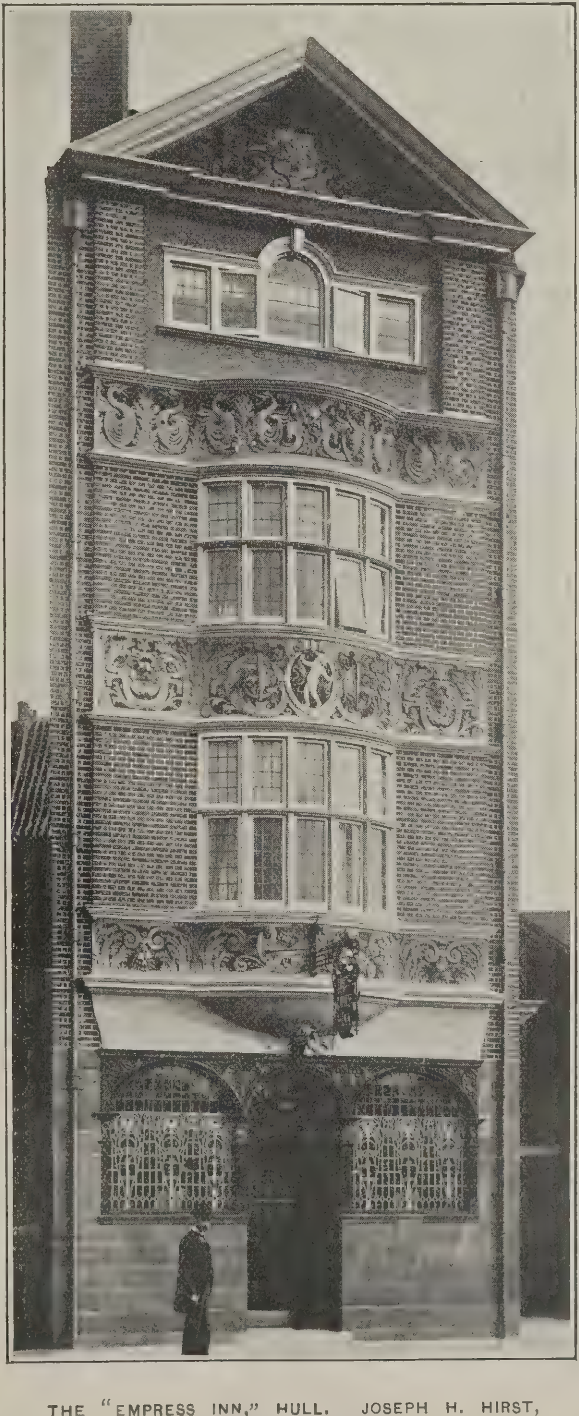
**"The Empress Inn," Hull,** is an old building with a new front. This is carried out in thin bricks with $\frac{1}{2}$in. joints, green faïence and modelled cement. The contract has been carried out by the Amalgamated Builders, Ltd., under the supervision of the city architect, Mr. Joseph H. Hirst.



THE "EMPRESS INN," HULL. JOSEPH H. HIRST, CITY ARCHITECT.

# Views and Reviews.

### Chemical Laboratories.

This book is a timely contribution to a branch of structural design which, with the spread of technical education, has been assuming more and more importance for some years. Previous to this book, little information has been published in this country respecting the planning and fitting-up of laboratories. The author worked out the details of the fittings of the chemical department at the Manchester Municipal Technical School in accordance with the instruction of Dr. Thorpe, the principal of the Government Laboratory, and is well qualified to write on the subject. The fitment of these departments of schools is so specialized that it could not be adequately dealt with in any of the ordinary books on school planning, and therefore Mr. Russell's book was urgently needed. The subject is treated most fully, even to ventilation and warming, and the Board of Education's list of apparatus. Of course, upon such a question of fitment there is allowance for much variation according to individual requirements, but the author has dealt with all the essentials of both large and small laboratories. Mr. Russell writes most clearly. We have nothing but praise for the book, which is extremely well produced by Mr. Batsford.

"The Planning and Fitting-up of Chemical and Physical Laboratories," by T. H. Russell, M.A London: B. T. Batsford, 94, High Holborn, W.C. price 7s. 6d. nett.

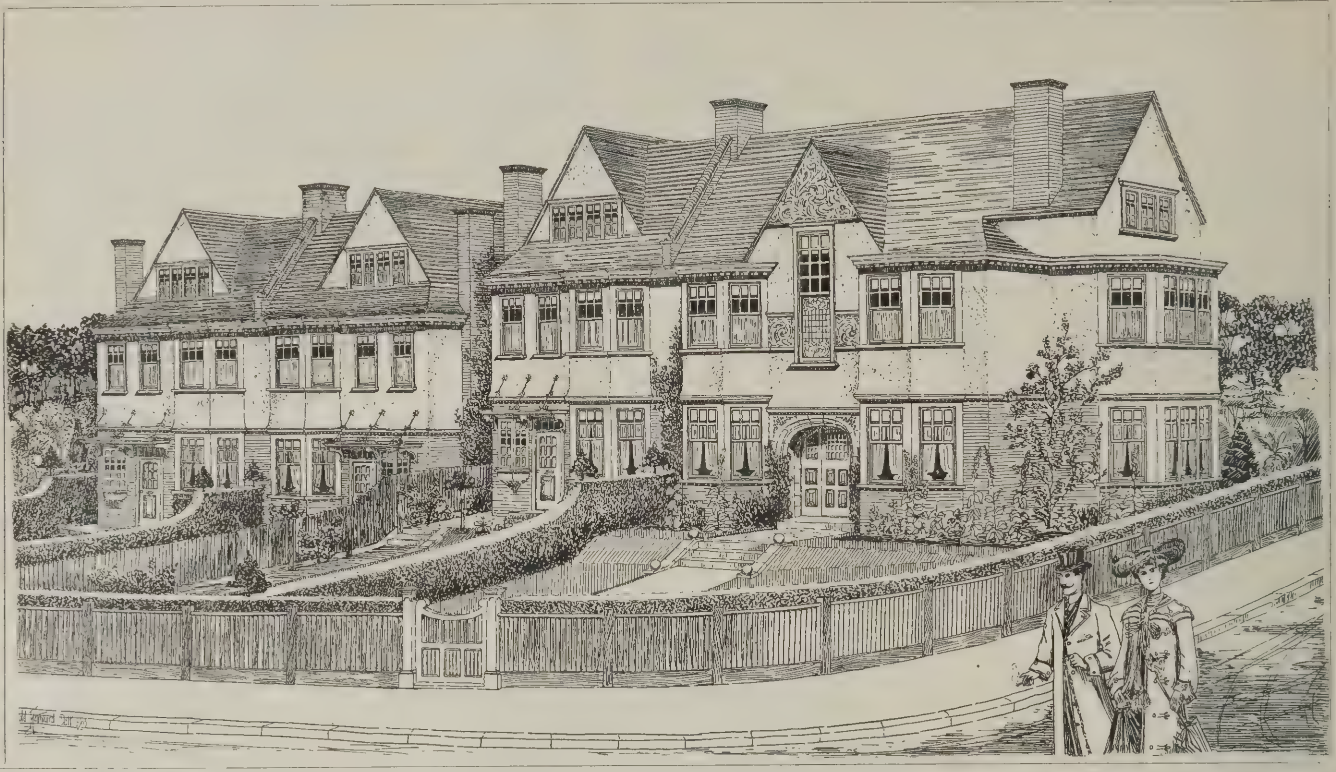
### Practical Science for Plumbers.

Mr. J. Wright Clarke is well-known as a lecturer on plumbing. He has found that classes in physics and chemistry are poorly attended by plumbers and other practical men, while the ordinary plumbing classes are crowded. It is therefore his own practice to devote the first portion of each of his lectures to physics and workshop arithmetic (and even then he finds students stay away from this portion). Mr. Clarke recently published the parts of the lectures applying to these scientific subjects in "The Plumber and Decorator," and in response to numerous requests they are now collected and republished in this volume. They are eminently practical for the instruction of the class of student Mr. Clarke is instructing, and are written in a fluent elementary style. The book should be very useful to students of plumbing and hot-water supply who have not been able to grasp the subject in lectures or have omitted to regularly attend these. The book consists of a multitude of physical facts expressed in a very general way, which sometimes leads to misconception of facts, although expressing part of the truth; and though this may be very suitable for plumbers, it would not be advisable for more educated students to study the book expecting to find it a thoroughly reliable work. But for the class of readers for whom it is intended, the book is admirable.

"Practical Science for Plumbers, Engineers, Students, &c.: A Series of Short Chapters on Physics, Metals, Hydraulics, Heat and Temperature, &c., showing their application to the problems of Practical Works," by J. Wright Clarke, Lecturer on Plumbing at the Polytechnic, Regent Street, W. London: B. T. Batsford, 94, High Holborn, W.C, price 5s. nett.

### Another Book on St. Albans.

The work of Lord Grimthorpe at St. Albans has been so much discussed that one almost wonders whether, in generations to come, the abbey will be more famous for its "restoration"



HOUSES ON DARTMOUTH PARK ESTATE, FOREST HILL, LONDON, S.E. JOHN MOIR KENNARD, ARCHITECT.

or for its original beauties and historical associations. The author of this book, we are glad to see, keeps up the tirade, as when speaking of the west front he says: "The design has been much criticized, but its general appearance will not be distasteful to the ordinary visitor, and is as good as is most nineteenth-century work." On the whole we have no fault to find with the book. The illustrations include a large number from excellent photographs of different parts of the cathedral. Good accounts of the church and see are given, and seven pages with three illustrations are devoted to the neighbourhood. The ground plan at the end of the book is spoiled by being tightly bound in, with the result that the middle part of it cannot be seen.

"The Cathedral Church of St. Albans and See," by the Rev. Thomas Perkins. London: George Bell & Sons, Covent Garden, price 1s. 6d. nett.

### Steel and Iron.

Like all Messrs. Macmillan's publications on technical and scientific subjects, this book is a really adequate treatment of the subject so far as present knowledge goes. Mr. Arthur H. Hiorns is the head of the metallurgy department at the Birmingham Municipal Technical School, and is well known as the author of a number of excellent manuals on metallurgy. This book is a small one of 514 octavo pages, and therefore cannot be expected to deal exhaustively with all the multitudinous facts that are known about iron and steel, but it does deal with all the main facts and principles from which the others may generally be deduced. It is remarkable what a lot Mr. Hiorns has managed to summarize in a short space. He knows how to write clearly and succinctly, and the illustrations are to the point and well reproduced. The book is free from intricate mathematics, and therefore will be easily read by those little acquainted with science. Architects and engineers will not find it too elaborate for their requirements, and to them, as well as to metallurgical students, it should be of the greatest service. Iron and steel are now so largely used in building, and are likely to increase in use, that architects may be expected to know something of their nature and manufacture.

"Steel and Iron, for Advanced Students," by Arthur H. Hiorns. London: Macmillan & Co., Ltd., price 3s. 6d.

### The Vatican.

Built by so many different hands, added to and altered during so many centuries, the Vatican Palace looks as if it had been hurled together by giants standing on the seven hills of Rome. But, as the author of this book point out, it can only be seen in its entirety from one vantage-point, the lantern of St. Peter's; consequently, the palace has to be studied piecemeal, as it was built.

Roughly speaking, the Vatican consists of two separate and wholly dissimilar groups of buildings on the slope of the hill at the foot of which St. Peter's lies. These groups are connected by two narrow galleries about 1 000ft. long, running parallel to one another about 240ft. apart, and joined near the middle by cross-galleries which divide the enclosed space into two rectangular courts. There have been fabulous stories about the number of rooms in the palace, but the best authorities give them as about 7,000, with more than two hundred staircases and twenty courts.

The Sistine Chapel is the most familiarly known of all the buildings belonging to the palace, and there is hardly need to remind our readers of the wonderful paintings which Michelangelo did there. It is worthy of note, however, that the great sculptor was only persuaded to undertake the work with much grumbling; though to-day the fame of Michelangelo is not so much as a sculptor as a painter. An excellent outline drawing of the famous so-called ceiling is given in the book.

After the Sistine, the Stanze and Loggie of Raphael claim precedence—the former consisting of four rooms decorated with the frescoes of Italy's great artist. The Loggie were reconstructed and added by Raphael after Bramante's death; but though they bear his name, he did not himself paint one of the famous series of Biblical pictures which have made the Loggie world-renowned. The pictures were probably done by his pupils, dominated still by the master's mind and spirit. "At the time when the Loggie were painted, towards the close of 1517, Raphael was surrounded with a corp of assistants, who were to him like so many extra hands. So well did they understand his methods and ways of working, that, it has been conjectured, he needed only to indicate hastily with a few determined strokes the main points of a composition. The best of his co-workers were then able to transfer it to wall or canvas practically as the master had conceived it."

Miss Potter describes in detail all the paintings, frescoes and tapestries not only in the parts already mentioned, but also in chapel of Nicholas V., the Borgia Apartments and other rooms; in fact, she describes them too much in detail, for there are numerous excellent reproductions supplementing the text. The latter part of the book is devoted to the sculpture galleries and the four rooms of pictures which constitute the Pinacoteca, wherein are gathered some of the masterpieces which Napoleon, the great thief, carried off to the Louvre, whence they had to be disgorged after the imperial emperor's ruin.

"The Art of the Vatican," by Mary Knight Potter. London: George Bell & Sons, Covent Garden, price 6s. nett.

### Practical Masonry.

Purchase's "Practical Masonry," which has just reached its fourth edition, befits its title. It is now one of the very best books on stone working, and far more practical than the majority of those which only confuse and weary us with involved and intricate geometrical demonstrations, for the practised mason knows these difficulties solve themselves in actual work. Architects will better understand masonry working from this work than from any of the books under the high-flown title of stereotomy. In this fourth edition, in addition to a general revision, new sections have been added relating to masonry estimating and quantity surveying, and to building stones, with an appendix of tables of diameters, circumferences and areas of circles. Logical use of stone in design is only possible with a knowledge of practical work; and if architects were to study such books as this we should be spared those lamentable illustrations of the elaborate, twisty, overwrought masonry that is praised so highly by the ignorant.

"Practical Masonry: A Guide to the Art of Stone Cutting," by William R. Purchase, Building Inspector to the Borough of Hove. London: Crosby, Lockwood & Son, 7, Stationers' Hall Court, Ludgate Hill, E.C., price 7s. 6d. nett.

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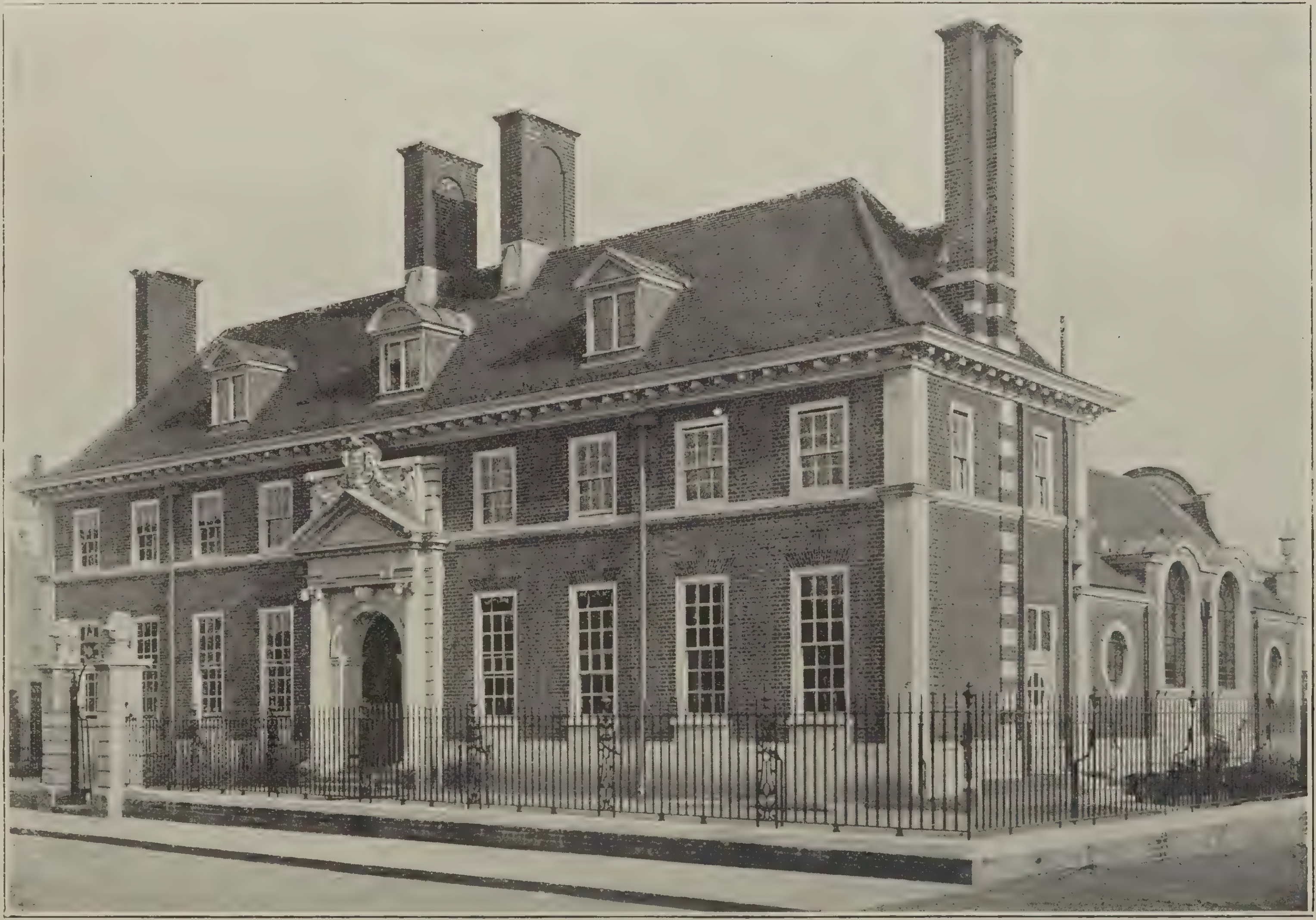

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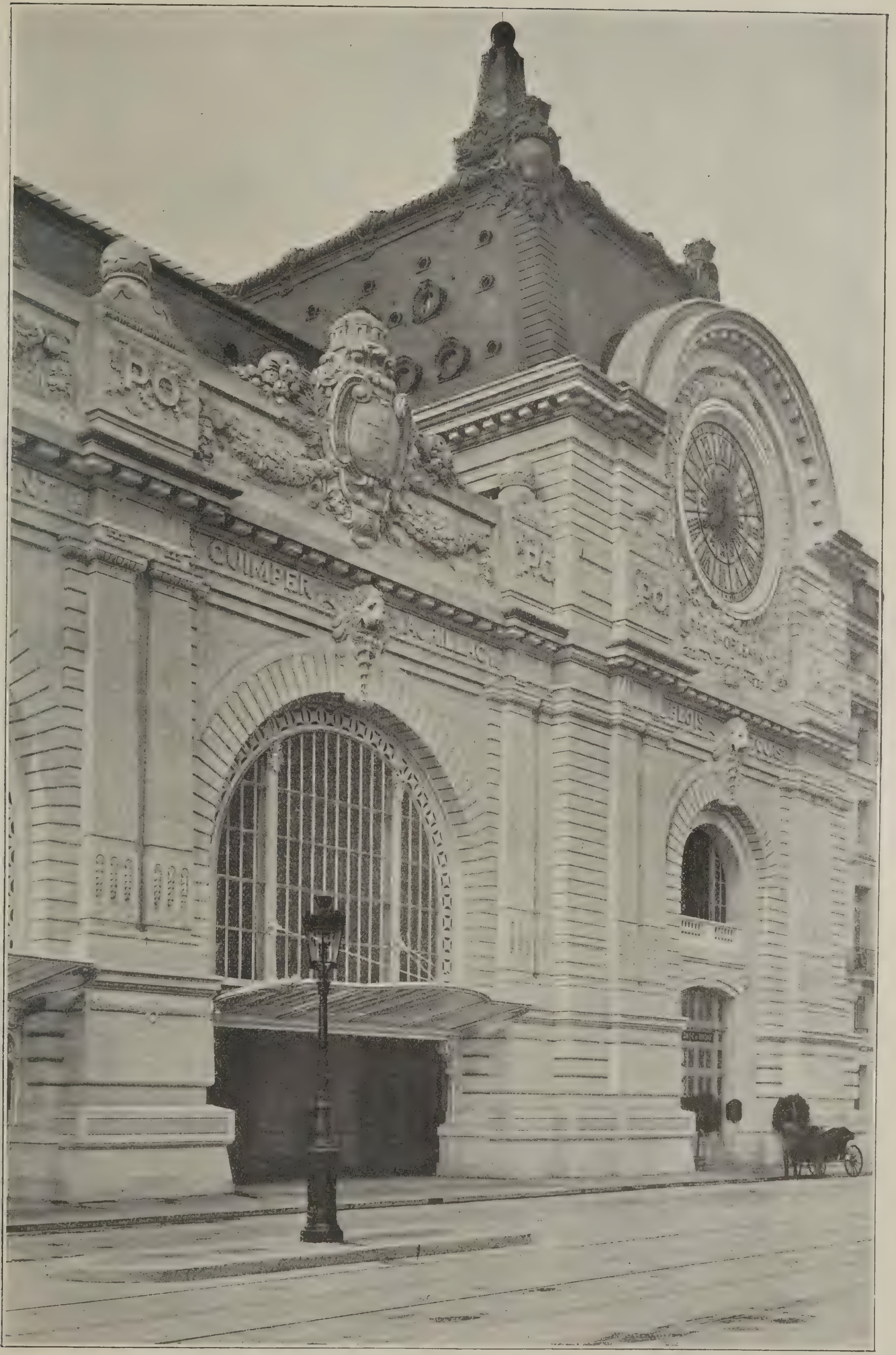

THE NEW GARE D'ORLEANS, QUAI D'ORSAY, PARIS: DETAIL OF FACADE. M. LALOUX, DESIGNER-IN-CHIEF.

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# Electrical Notes.

**Our Electric Motor Skate (!)** attracted the attention of six London newspapers and eleven provincial dailies.

**A Speed of 125½ miles an hour** was obtained last week on the military electric railway between Marienfelde and Zossen, near Berlin.

**The new Bexley Heath Electric Tramway,** which joins Woolwich to Erith, is 5½ miles long, and together with the electric-lighting scheme has cost £80,000. Messrs. Morday & Dawbarn, of Westminster, were the engineers.

**Speed of L.C.C. Tramcars.**—The Board of Trade regulations for the L.C.C. electric tramways are now hung in all the cars. The speed allowed ranges from twelve miles an hour on Clapham Common to six miles in Westminster Bridge Road.

**Electrifying the Railways.** — The North Eastern Railway Co. has had trial runs on a portion of the line between Newcastle and Tynemouth, a distance of three miles, which is the first of the local lines that have been electrically equipped. It is proposed to electrify twenty-seven miles of double track, and the work is being pushed forward rapidly. The current provided by the Tyneside Power Co., from a station at Wallsend, is conveyed along a third rail. The cars have attained a maximum speed of forty-five miles an hour, and an acceleration speed of thirty miles in thirty seconds from starting.

**£1,000,000 for Electric Trams at Belfast.**—The Belfast City Council intend to purchase and electrify the tramway system of their city at a cost of close upon a million pounds.

**To Encourage the use of Motors.**—In order to encourage an increased day load, the Electricity Committee of the Islington Borough Council recommend the adoption of the following sliding scale in the case of all electricity for motor-power purposes consumed between midnight and 6 p.m.:—For all units up to 2,000, 2d. per unit; from 2,000 to 20,000, 1½d. per unit; and from 20,000 and over, 1¼d. per unit.

**Messrs. Dick, Kerr & Co.,** having absorbed the English Electric Manufacturing Co's works at Preston, are now able to turn out the largest direct-current and three-phase generators yet designed, together with all sizes of stationary motors, controllers, &c. Since entering the electric traction field they have completed and have in course of construction permanent way, overhead lines, cables, rolling stock, electrical equipment, generating plant and general engineering machinery amounting in round figures to seven and a half millions sterling.

**At Wolverhampton's new Infirmary and Workhouse** the electric-lighting plant consists of two Belliss-E.C.C. combined sets, each capable of giving 66 kw. at 205 volts; the engines exhausting into the heating system. A battery of chloride cells is provided with a discharge rate of 9 kw. for nine hours, and an E.C.C. booster for charging it. There are about 2,200 lights fixed, and the feeding points are connected by B.I.W. lead-sheathed cable laid along the pipe trunks. The installation has been carried out by Messrs. Woods, Slacke & Co., of Blackburn, to the specifications and plans of Mr. David Stevenson, of Westminster.

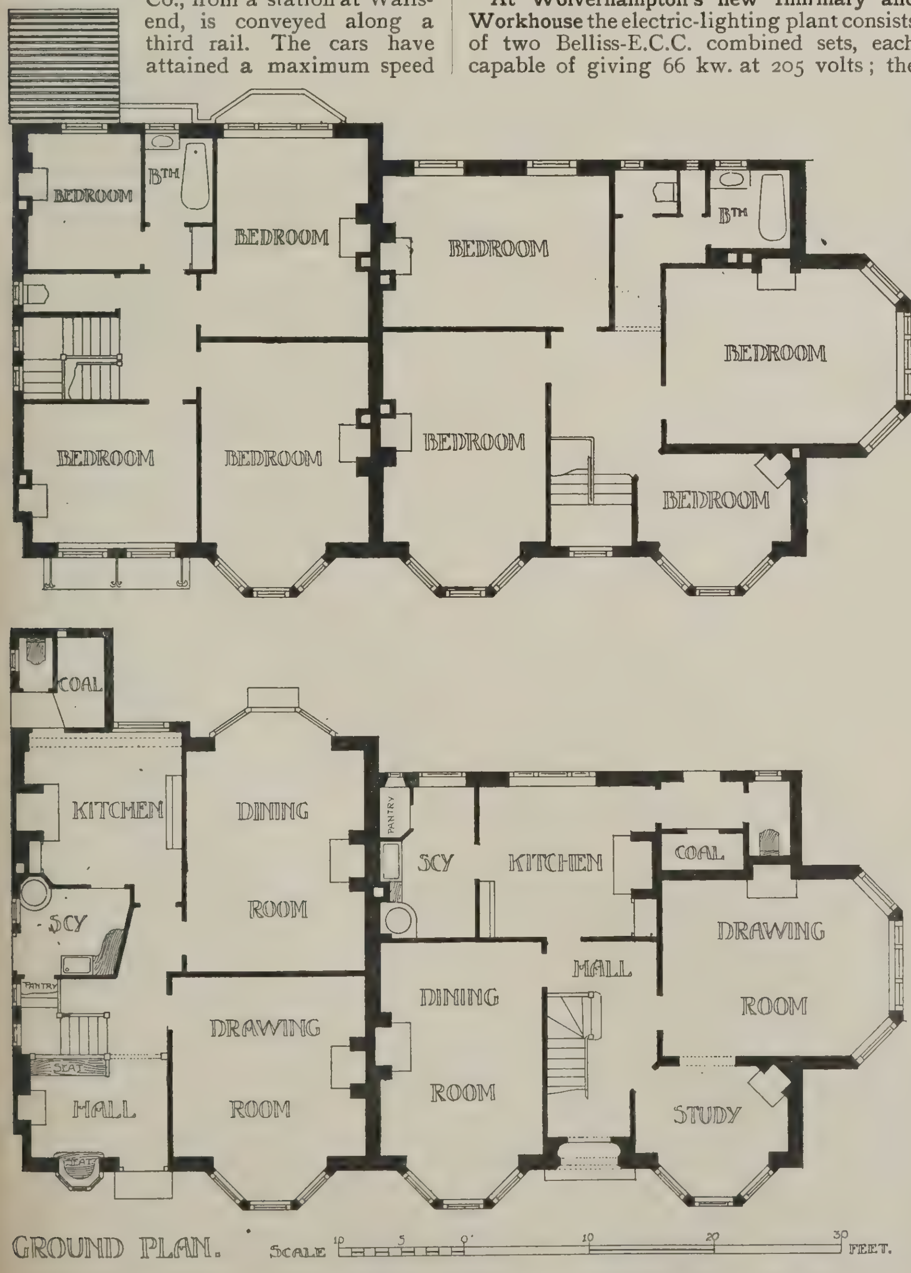
**The new Power Station for the Brussels Tramways** was recently opened in the presence of the King of Belgium. It contains four double-compound tandem engines installed by the Thomson-Houston Co., and three-phase alternators of 1,500 kw. at 6,600 volts installed by the Union Electricitäts Gesellschaft, of Berlin. There are three 110 kw. exciters, two being worked by asynchronous motors running at 6,600 volts, and the third by a steam engine. From the central station, energy at 6,600 volts is brought to the sub-stations, transformed to 410 volts, and converted into a continuous current at 550 volts.

**St. Petersburg gives preference to Russian Firms.**—The new law authorising the St. Petersburg Municipal Council to conclude a loan of 30,000,000 roubles for the conversion of the horse tramways to electric traction renders it obligatory on the Council in placing orders for the work to give preference to Russian firms, and only to consider foreign firms when the goods are either not produced in Russia or the Russian offers are higher than the foreign tenders, inclusive of import duties. It is assumed that this stipulation will in future be imposed on all municipal loans for public works. The condition is, however, not so strict as in the case of State orders, as home works are given preference, even if their prices are 15 per cent. higher than the tenders from contractors in other countries.

**The Edison Cell.**—There is no man about whom more misrepresentations are made than Mr. Edison; with the result that we come to regard all reports of his inventions with suspicion. There appears, however, to be no doubt that the new battery which he has invented marks a great advance in this form of electrical power. A few weeks ago we gave some particulars of the successful trials made with it in a delivery wagon. The "Electrical Review" now states, on unimpeachable authority, that the excellent performance of the cells on the road has proved equal to their behaviour in the laboratory. Our contemporary says there can be no doubt that, as soon as the cells are placed on the market in quantity, an immense impetus will be given to the electric automobile industry.

## DARTMOUTH PARK ESTATE.

THESE houses are being erected upon land belonging to the Earl of Dartmouth, by Mr. E. C. Christmas, builder, of 55, Dartmouth Road, Forest Hill. The estate, which is within a short distance of Forest Hill Station, has frontages to Perry Vale, Sunderland Road and Church Road, and a new road connecting the two latter. The houses are semi-detached and planned upon quite modern lines, without any basements and cellars, many of them being designed to have only two storeys, but others will have several additional bedrooms in in the roof, or a large room which can be adapted for a nursery or for a billiard-room. The lounge entrance hall, with oriel, is made a special feature in the plan here reproduced. The materials used are stock brickwork with red-brick facings and rough-cast, wood cornices and tiled roofs. The architect is Mr. John Moir Kennard, A.R.I.B.A., of 13, Railway Approach, London Bridge, S.E.



GROUND-AND FIRST-FLOOR PLANS OF HOUSES ON DARTMOUTH PARK ESTATE, FOREST HILL, LONDON, S.E.

# Keystones.

**The A.A. Conversazione** will be held on October 28th at the Royal Institute of Painters in Water Colours, Piccadilly, at 8.

**As a Memorial to Queen Victoria** the Victorian Hall adjoining Holy Trinity Church, Scarborough, has been erected at a cost of £2,000.

**Glasgow Tea-Rooms.**—A new frontage to Mr. Stuart Cranston's Buchanan Street premises and the Argyll Arcade is being erected. The structure is a free treatment of the Classic style. The basement portion will be of Peterhead granite and the upper seven storeys of red sandstone.

**The Stratford Cottages to be Preserved.**—At a meeting of the trustees of Shakespeare's birthplace held at Stratford-on-Avon last week it was decided, by nine votes to six, not to demolish the two old cottages abutting on Shakespeare's garden, about which there has been so much discussion.

**King's Park Burgh School, Dalkeith,** opened recently, provides accommodation for 610 pupils, but the administrative departments, staff-rooms, cloak-rooms, &c., have been designed for future extension. The architect was Mr. Thomas T. Paterson, of Edinburgh. The cost of the building was £12,000.

**The Palace Theatre, Newcastle,** has been extensively altered and re-decorated. Originally a circus, it was converted into a concert hall, and then into a playhouse, the last alterations having been effected five years ago. Now again the interior of the theatre has been almost completely transformed from the designs of Mr. J. Walton Taylor, F.R.I.B.A., of Newcastle.

**A Tyneside Church.**—With the completion of St. Chad's, in the new Saltwell district, Gateshead now possesses what is regarded as the finest and most elaborately decorated modern church in the northern province. Altogether £26,000 has been spent on the structure, originally designed to cost about £7,000. The style is fifteenth-century Perpendicular. The carvings in the interior are on an elaborate scale. The interior is lofty.

**The Yorkshire Electric Power Co.** are now erecting their first power station at Thornhill, where a 6,000 h.p. generating plant will be installed. The generators are to be driven by Curtis steam turbines, the whole being supplied by the British Thomson-Houston works at Rugby. The company, it is stated, are now in a position to negotiate for the supply of power within a radius of 10 miles of the first station, and power will be available in about ten months' time.

**Manx Government House.**—The Tynwald Court have decided to spend £2,433 on additions and alterations to Government House, Douglas. These additions and alterations provide, in addition to the present accommodation, a large reception-room, a larger study for the Governor, and 2,010ft. of bedroom accommodation, and the substitution of a spacious hall for the present library; besides which they provide much-needed light and ventilation.

**The Remains of a Roman Villa** have been discovered on the property of Mr. Wingfield Digby, M.P., at Fifehead Neville, Dorset. In 1880 some indication of the site was discovered in an elaborately designed mosaic floor, and through the action of Mr. Digby, who has borne the cost of the excavations, the remains have now been brought to light. They include several large and beautiful tessellated floors, the tesseræ being exceptionally small and of highly artistic design. The stone foundations of the walls of the villa have also been disclosed, together with the hypocaust and flues by which the winter living room was warmed.

**The Liverpool Pier Baths** are to be carried out by Mr. A. Saxon Snell, F.R.I.B.A., of London. They will cost £75,000.

**A new U.F. Church at Cambusnethan** has been erected at a cost of £4,000 from designs by Messrs. J. & J. Steel, architects, Wishaw.

**A new Baptist Church and Schools at Twickenham Green** are to be erected at a cost of about £55,000 from plans by Messrs. George Baines, F.R.I.B.A., and R. Palmer Baines, of 5, Clement's Inn, Strand, W.C.

**A new Wholesale Market at Wolverhampton** has just been erected in Wulfruna Street, at a cost of £16,850, by Messrs. George Cave & Son, of Wolverhampton, from plans by Mr. George Green, the borough engineer.

**Highams Park United Methodist Free Church** is now being erected at an estimated cost of £1,828. The facings are in pressed red bricks and the dressings in white Costessey work. The architects are Messrs. George Baines, F.R.I.B.A., and R. Palmer Baines, of 5, Clement's Inn, Strand, W.C.

**Heywood Library Competition.**—Sixty-two sets of designs have been sent in for the competition for the erection of a new library at Heywood, and these will be on view to the public in the lecture hall of the Technical School, Heywood, on Friday and Saturday, October 16th and 17th, from 10 a.m. to 9 p.m.

**Foreign Memorials.**—A monument to the late Empress Augusta and an equestrian statue of the Emperor Frederic III. have been erected at Cologne. A memorial to Wagner has been erected in the Thiergarten, Berlin; it is the work of Professor Eberlein. Wagner is represented sitting, whilst on his left Wolfram von Eschenbach is ascending the steps, lyre in hand, to do homage to the Master.

**An Isolation Hospital at Thistle Hill, Knaresborough,** is being erected at an estimated cost of £22,000 from designs by Mr. George H. Stanger, of Wolverhampton. The contractors for the work include—Messrs. J. Simpson & Sons, mason; Mr. J. W. Rudd, joiner; Councillor J. Shepherd, slater; Messrs. Fortune & Calverley, plasterers; Mr. H. O. Atkinson, ironwork; J. Thompson, plumber; and Messrs. Morley & Son, painters. Mr. T. Craddock is the clerk of works.

**The new Marlborough Theatre** in the Holloway Road, London, N., has been designed by Mr. Frank Matcham. The style adopted is French Renaissance, the facings being of dark-red bricks with terra-cotta dressings. Over the centre is a great copper dome. There is seating accommodation for 3,000 persons, and from every part an uninterrupted view of the stage is obtained. The gallery is very large. The stage measures 43ft. by 76ft. and 56ft. to the grid.

**A Monument of Alexandre Dumas fils** is being executed by M. de Saint-Marceaux, to be erected in Paris. The artist recently called together a select conclave consisting of MM. Victorien Sardou, Jules Claretié, Bouvard, Edouard Détaille, Georges Berger and François Flameng in order to obtain their criticism not only of the monument in plaster which he has prepared but of its relativity to the site where the completed work will eventually stand.

**St. Michael's Church, Highgate,** has been decorated from designs by Mr. Temple Moore, of Hampstead. Four stone statues of early fathers of the Church have been placed in the niches by the side of the large stained-glass window, and the walls have been decorated in diaper pattern in a late Gothic style, in keeping with the architecture of the chancel, which was built from the designs of the late Mr. George Street. Below the niches is a new stone cornice to the reredos, richly carved in vine-leaf pattern and painted and gilded. The reredos has been coloured, and a new retable has been added to it, the walls on each side being supplied with rich hangings.

**The Parish Church of Normanton-by-Derby** has recently been enlarged and renovated at a cost of £2,000.

**St. Aidan's Crew's Hole Church, Bristol,** is now being erected at a cost of about £7,300. It will seat 755 worshippers. Mr. G. F. Bodley, R.A., is the architect.

**Cardiff University College Competition.**—Four architects were recently invited by the Council of the University College of South Wales and Monmouthshire to submit plans for the new college buildings to be erected in Cathays Park, Cardiff. Mr. W. D. Caröe's design was selected by the assessor and has just been approved by the Council.

**Competition for Reconstruction of Wakefield Cattle Market.**—The Competition Reform Society disapproves of the conditions of this competition because there is no guarantee that a professional assessor will be appointed or that any of the designs submitted will be accepted; and moreover that the premiums are insufficient. Members are therefore requested to abstain from competing unless the conditions are satisfactorily revised.

**A Library Competition at Birkdale.**—Mr. Carnegie has given £5,000 for the purpose of building a library at Birkdale. The site chosen by the Council adjoins the Town Hall. A competition for designs is to be held, and designs are to be invited from architects residing in Birkdale. The prizes offered are: first premium, £50; second premium, £30; third premium, £15. The president of the Manchester Society of Architects will be appointed adjudicator on the plans.

**The new Hackney Technical Institute** in **Dalston Lane, N.E.,** was formally opened last Thursday, and on Monday the staff began the courses of technical instruction. The cost of the new building, exclusive of site, has been nearly £16,000, but presently it is hoped that the governors will be in a position to build a much larger block fronting Dalston Lane. The equipment has cost over £3,000, and includes the best and most modern appliances for technical instruction. Mr. Percy Kirk is the principal.

**Art in the Home.**—Mr. Ernest Beckett, M.P., in opening the new School of Art at Leeds last week, said he trusted that art would be associated with daily life to a far greater extent than it was at present. He decried unnecessary and useless ornaments, and urged that the essence of beauty was simplicity. No one could go wrong in decorating a house as simply as possible. Many of the departures from simplicity were due to women. In many houses, while there was good taste in the smoking-room, this died a natural death in the drawing-room.

**Glasgow and West of England Technical College.** — The annual report states that £182,382 has been given and promised towards the £210,000 required for the new buildings of the college. Mr. T. L. Watson, F.R.I.B.A., as the representative of the Glasgow Institute of Architects, has been elected a governor, and this appointment has been followed by steps taken in conjunction with the Glasgow School of Art for the better organization of the teaching of architecture in the city, as well as of the numerous classes connected with the building trades.

**A Big Competition.**—A Bill introduced in the Folkething at Copenhagen relative to the rebuilding of Christiansborg Castle, which was burned down in 1884, provides for the appointment of a Government Commission which is to open a competition for plans of the new building, the sum of £550 being fixed as the highest prize to be awarded. The new castle, besides being intended for the use of the King for Court functions and for the reception of Royal visitors, is to be provide accommodation for the Rigsdag. The cost of rebuilding is estimated at £333,000, exclusive of the artistic decoration.

# WORKMEN'S COMPENSATION.

### What Builders Paid Last Year.

SOME returns for workmen's compensation in the United Kingdom during 1902 under the Workmen's Compensation Acts of 1897 and 1900 and the Employers' Liability Act of 1880 are given in a report issued by the Home Office.

The particulars given in the report are gathered from returns of county court cases and memoranda by registrars recording agreements or awards by private arbitrators which have been registered. While these are of interest, they leave untouched the great body of cases which are settled by agreement and of which no official information is available.

The total number of building cases taken into court in England and Wales, under the Workmen's Compensation Act, was 159 in 1899, 151 in 1900, 243 in 1901 and 197 in 1902: under the Employers' Liability Act the cases were respectively 130, 129, 124 and 122.

### England and Wales.

In the county courts of England and Wales during 1902, 36 cases of death and 134 cases of partial and total incapacity were settled under the Compensation Acts, the total amount of compensation awarded being about £5,600. Under the Liability Act there were 7 actions in respect of death and 115 for incapacity, the total damages awarded being £2,663. Under the Compensation Acts there were 8 appeals from the county courts to the Court of Appeal and one to the House of Lords; one also to the High Court of Justice under the Liability Act.

### Scotland.

In Scotland, under the Compensation Acts, there were 8 cases of death and 30 of incapacity settled in the Sheriff courts, the total amount of compensation being £1,180; while 2 actions for death were brought under the Employers' Liability Act and 36 for partial incapacity. There were three appeals to the Court of Session.

### Ireland.

In Ireland one case of death and 25 cases of incapacity came before the county courts, under the Compensation Acts, the total amounts awarded being £450; under the Liability Act there were one case of death and 7 of partial incapacity—total damages awarded, £82. There were 6 appeals, 3 to the Court of Appeal and 3 to the High Court of Justice.

Mr. Thomas Coffey, secretary of the General Labourers' Union, states that within the past ten years the number of accidents in the building trade has increased by over 50 per cent. Mr. Coffey's experience of the risks of builders' labourers in London is amplified by the large proportion of such workmen attached to his Union. Thus, in 1900, with a membership of 7,000, his Union paid £700 in relief of accidents to builders' labourers, while last year, on a smaller membership, more than £800 was so distributed. Mr. Coffey attributes the enhanced risks to the recklessness and hurry of provincial contractors who have invaded London, and who work at lower profits than the old-established Metropolitan firms.

# MR. CHAMBERLAIN'S TARIFFS.

SOME most valuable tables showing the building exports and imports of this country during the last thirteen years were published in THE BUILDERS' JOURNAL for September 23rd last, together with special figures relating to preferential tariffs. In the following issue, September 30th, comparative tables were given of building trade wages in Europe and America. These are of special interest at the present time. The figures have been compiled from the Board of Trade blue-book, in which they are only to be found after considerable trouble.

# BANKRUPT ARCHITECTS AND BUILDERS.

THE following table shows the number of receiving orders and orders of administration in respect of architects, builders and others in the United Kingdom during the past two years:—

| — | 1901. | 1902. |
|---|---|---|
| Architects and surveyors - - | 10 | 23 |
| Auctioneers, house and estate agents - - - | 48 | 39 |
| Brick and tile makers - | 9 | 11 |
| Bricklayers, plasterers, &c.- | 17 | 24 |
| Builders - - - | 286 | 266 |
| Builders' merchants - | 8 | 8 |
| Carpenters and joiners - | 29 | 40 |
| Contractors - - | 13 | 18 |
| Decorators, painters, plumbers, glaziers, &c. - | 97 | 115 |
| Timber merchants - - | 17 | 22 |

ANALYSIS OF BUILDING TRADE FAILURES FOR 1902.

| — | No. | Liabilities. |
|---|---|---|
| | | £ |
| Brick and tile manufacturers and merchants | 15 | 14,522 |
| Bricklayers, plasterers - | 34 | 8,781 |
| Builders - | 458 | 481,696 |
| Builders' merchants - | 12 | 17,070 |
| Carpenters and joiners - | 62 | 23,462 |
| Cement and lime manufacturers and merchants - - | 1 | 740 |
| Decorators, painters, plumbers, &c. - | 210 | 74,883 |

WOMEN FAILURES DURING 1902.

| — | No. | Liabilities. | Assets. |
|---|---|---|---|
| | | £ | £ |
| Builders - - | 4 | 4,517 | 3,295 |
| Decorators, painters, &c. - | 6 | 3,740 | 2,402 |

| Trades. | 1898. | | 1899. | | 1900. | | 1901. | | 1902. | | Increase or decrease in 1902 as compared with 1901. | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | Increase. | | Decrease. | |
| | No. | Liabilities. | No. | Liabilities. | No. | Liabilities. | No. | Liabilities. | No. | Liabilities. | No. | Liabilities. | No. | Liabilities. |
| | | £ | | £ | | £ | | £ | | £ | | £ | | £ |
| Architects and surveyors - - - | 13 | 15,455 | 27 | 83,203 | 18 | 25,673 | 13 | 15,985 | 26 | 32,929 | 13 | 16,944 | — | — |
| Auctioneers, house and estate agents | 47 | 51,558 | 57 | 76,483 | 53 | 75,375 | 52 | 133,524 | 47 | 84,734 | — | — | 5 | 48,790 |
| Building - - | 643 | 468,915 | 818 | 733,324 | 973 | 1,154,720 | 754 | 761,149 | 792 | 621,154 | 38 | — | — | 139,995 |
| Contractors - - | 34 | 84,049 | 31 | 45,954 | 24 | 196,543 | 31 | 215,740 | 24 | 19,415 | — | — | 7 | 196,325 |
| Timber merchants - | 31 | 118,580 | 26 | 91,503 | 35 | 110,549 | 35 | 266,466 | 38 | 145,425 | 3 | — | — | 121,041 |

# Enquiries Answered.

*The services of a large staff of experts are at the disposal of readers who require information on architectural, constructional or legal matters. Questions should in all cases be addressed to the Editor. The querist's name and address must always be given, not necessarily for publication.*

### English Oak.

KENDAL.—X. Y. Z. writes: "(1) Where can good sound English oak suitable for interior panelling be obtained? (2) Does English oak stand as well as Dantzic under any conditions? (3) Is Devonshire oak better than other English oak for interior work?"

(1) Try Astell Brothers, of Bedford. (2) Yes, better in almost all conditions, though if exposed English oak is very liable to warp and crack. (3) No.

### Reproducing Drawings.

DOVER.—G. C. R. writes: "What is the process for obtaining reproductions of pen-and-ink drawings by means of a copper plate; also, where can I procure the metal?"

Properly speaking, this question is outside our sphere. But we will endeavour to answer it. First, however, we are not clear about what you want to do. Practical photographic reproduction of pen-and-ink drawings consists in photographing them on to a zinc plate sensitized with a solution of bichromated gelatine; the parts affected by the light, *i.e.*, the lines, are rendered insoluble in water, so that when the plate is afterwards washed the unaffected parts are dissolved, leaving the drawing in lines of gelatine. This is then dusted over with what is called the "resist," which is pitch, and the plate is put into an acid bath, where the unprotected metal is eaten away. When finished the lines stand out clear on the plate, and the printing block is ready. Copper is seldom used for this process. Perhaps what you mean is nothing else than etching. This can be done by covering the plate with a thin film of wax and then drawing on it down to the metal with a needle. When the plate is put into an acid bath the lines are of course eaten in, with the same result as a visiting card. The gradation in an etching is obtained by eating in the lines to different depths. Sometimes the drawing is done on the plate when in the acid. Metal and needles, &c., for etching can be obtained from Messrs. Reeves & Sons, Ltd., whose offices and works are at 18, Ashwin Street, Dalston, N.E.

### Design for Galvanized Iron Building.

GILLINGHAM.—X. Y. Z. writes: "Could you give me a design with a short specification of timber, &c., for a galvanized iron building about 25ft. long by 20ft. wide? To be wood-lined and covered with galvanized iron sheets, and felted. The cost not to exceed £85. It is for a reading-room in a small country parish."

This is asking a little too much of us. You had better apply to an architect or to one of the well-known firms who supply galvanized iron buildings.

### Books for a Teacher of Building Construction.

PORTSMOUTH.—TECHNICAL writes: "Are there any books published specially helpful to a Building Construction teacher under the Science and Art Department? Also, from whom are the old examination papers obtainable?"

As regards text-books on Building Construction, we advise you to get "Specification No. 6," Mitchell's "Building Construction" (2 vols.), Rivington's "Notes on Building Construction" (4 vols.), Tarn's "Science of Building," Dobson's "Art of Building," Phené Spiers's "Architectural Drawing," Davis's "Quantities." Particularly read the articles on Building Construction and the answers to the South Kensington examination papers which have appeared in our last four volumes. As regards rules of the Board of Education, &c., you should have the Directory: Part II. of the Schools and Classes in connection with the Board of Education, South Kensington (published by Eyre & Spottiswoode, East Harding Street, E.C., price 3d.). The examination papers in science subjects, which include architecture, are published from 1877 to date, price 6d. for each year, by Messrs. Eyre & Spottiswoode.

### Fixing Granite Slabs on Shop Fronts.

SCOT writes: "Which would be the best way to fix granite slabs on the face of iron butts between shops? Would it be sufficient to cement them to the brick? What thickness should the slabs be?"

Use ordinary galvanized iron dowels. The cement would not give a sufficient hold. The slabs are usually 4in. thick.

### Ancient Lights.

CARDIFF.—SOX writes: "A and B are neighbours. A proposes to add a shop front to his premises, but B objects, because he says A is taking his light, and threatens to bring an action against him if the work proceeds. Can he stop A from carrying out the work?"

Not unless he has enjoyed the light for twenty years without one year's continuous interruption.

### Opening Door into Road.

SUFFOLK.—LEGAL writes: "My client has recently sold part of a property to A, who is the owner of the road shown on the accompanying plan (not reproduced), over which the general public have had free right of way for many years; it forms the only means of entrance to several houses. My client now wishes to open a door into this road which has been bricked up for some years. A objects. Can this objection be upheld?"

Assuming that the roadway in question is A's property, B has most certainly no legal right whatever to open a door upon it, unless (1) the door was in existence and use at the time he sold the property to A; (2) there was some clause in the contract for sale or in the conveyance by which B reserved such a right. The facts that the public are allowed to pass over A's road and that the owners of certain other properties have access to their premises by means of it, are in themselves no evidence that any one of those owners may treat it as a public road to which he has unlimited access! Has the roadway been repaired at the public expense? If so, the case is probably altered; but in any case I would strongly deprecate any action on B's part, except under competent legal advice, as in my opinion A will probably be found able to sustain the objection he has lodged. G. S. M.

### The Temple of Eleusis.

LONDON, S.W.—THREE YEARS' SUBSCRIBER writes: "What is the diameter at the base of the shaft of the column of the Ionic Temple at Eleusis? I have consulted several books, but none give a foot scale except Mr. Spiers's 'Orders,' and this shows it as 2ft., which seems to me to be rather small."

"Three Years' Subscriber" refers to a plate of mine reproducing the Ionic order at Eleusis, but he has neglected to read in the fourth edition the descriptive text of the same, or he would have seen that the order is not that of a temple, but of the (so-called) Lesser Propylæa where it decorated the flank walls only, and was raised in a position some 4ft. to 5ft. high. The scale is correct: see description, p. 69 and note, in Anderson and Spiers's "Architecture of Greece and Rome."

R. PHENÈ SPIERS.

### Lantern Slides of Country Houses.

BLACKPOOL.—A.R.I.B.A. writes: "Where could I obtain slides suitable for illustrating a lecture on country houses and their furniture?"

A few slides of country houses, both exteriors and interiors, might be obtained from Mr. J. H. Steward, 457, West Strand, W.C., but my personal experience has generally been that I have had to take my own photographs and make my own slides. Any photographer, however, would make slides from photographs or drawings if they were supplied to him. Slides can be borrowed from the Architectural Association (56, Great Marlborough Street, W.) The charge to non-members is 1s. 6d. per dozen for every seven days. A list of them can he had from the secretary. Some of these may serve your purpose. G. A. T. M.

### Modulus of Rupture.

SIDMOUTH.—DOWN SOUTH writes: "Is the following calculation correct?—To find the scantling for a beam to carry 5 tons distributed over a span of 20ft. (material, Baltic fir). Preliminaries:—

$l$ = span = 20ft. = 240in., $fo$ for Baltic fir 5760 lbs.

$$w = (5 \text{ tons} = 11200) = \frac{11200}{240} = 4\tfrac{2}{3} \text{ per inch.}$$

F = factor of safety = 4.

$$\frac{(\text{FW})l^2}{8} = fo\frac{bd^2}{6}.$$

$$bd^2 = \frac{6 \times (\text{FW})l^2}{8fo} =$$

$$\frac{6 \times 4 \times 4\tfrac{2}{3} \times 240 \times 240}{8 \times 5760} = \frac{6451200}{46080} = 140.$$

Taking $b = 4\text{in.} = \frac{140}{4} = 35 = d^2$, and $d = 5{\cdot}916$ = approx. 6in. Answer: 6in. × 4in."

Refer to the article on this very point which appeared in THE BUILDERS' JOURNAL for November 13th, 1901. You have blundered in your arithmetic. Bending moment at centre of beam $= 2{\cdot}5 \times 10 - 2{\cdot}5 \times 5 = 12{\cdot}5$ ton-feet $= p\frac{bd^2}{6}$, where $p$ is the maximum stress in tons per sq. ft., and $b = \frac{1}{3}$ft. $\frac{5760}{4} = 1440$, and this in tons per sq. ft. is $\frac{1440}{2240} \times 144 = 92{\cdot}57$; $\frac{1}{3}$ of this is $30{\cdot}86$.

$$d^2 = \frac{75{\cdot}0}{30{\cdot}86}. \quad d = 1{\cdot}55\text{ft.}$$

$\frac{(\text{FW})l}{8} = f\frac{bd^2}{6}$ (if W is the total load, $l$ need not be squared; $\frac{11200}{240} = 46\tfrac{2}{3}$).

$$\frac{4 \times 5 \times 2240 \times 240}{8} = \frac{5760 \times 4}{6}d^2.$$

$d$ = 19in. nearly. It may be observed that the most conflicting values for what is called the modulus of rupture appear for timbers in tables which are given as the result of experiments by well-known men; the lesson from which is that either a very large factor of safety should be used or the particular timber should be tested for any particular work. For example in Table I., Rivington, Vol. IV., p. 327, fir (red Baltic) varies from 2,240 to 14,000lbs. per sq. in. Perry advises (Applied Mechanics, p. 411, 1897 edition) a piece 1in. by 1in., placed on supports 12in. apart loaded in the middle till it breaks, and the number of lbs. so found he calls $c$, for his formula $wl = cbd^2$; W and $c$ are in lbs., $l$ is in feet, and $b$ and $d$ are in inches. To make this formula apply to a beam supported at the ends and uniformly loaded, one-half of the uniform total load would be taken multiplied by the factor of safety and put for W (to get $d$ for an assumed $b$). The mode of calculating deflection was given as a question in the South Kensington examinations, Advanced Stage, this year, and it was answered in THE BUILDERS' JOURNAL for May 27th last. The subject was also dealt with fairly complete in the Building Construction article in THE BUILDERS' JOURNAL for November 20th, 1901. P.

# Obituary.

**Mr. John Henry Brass**, builder and contractor, of Chelsea, died recently at the age of fifty-three years.

**The late Mr. James Bowden**, builder, of Enden, Stoke-on-Trent, left an estate which has been valued at £17,960.

**The late Mr. Robert Freeman**, retired builder and contractor, of Kingston-upon-Hull, died worth £16,154 gross.

**Mr. Thomas Alexander Page**, architect, of South Shields, died recently at the age of seventy years. Deceased was a native of Peterhead, which he left forty years ago. He took a conspicuous part in the laying-out of the new borough of South Shields, many of the largest estates in the town having been placed in his hands.

# SCIENTIFIC MASONRY—II.

*(Continued from p. 40, No. 455)*

### Circle on Circle Arch.

By JOHN WORNELL.

TO illustrate this problem, I have chosen a semi-circular arch in elevation, Q being the centre. The plan being circular, and struck from Q Q, divide the convex into any convenient number of parts. These radiating to the centre divide the concave also. To produce the face moulds, the development must be projected from the elevation and placed, as shown, to the right of the centre line. Measure the length 0′ to 14′ convex and $0^{x}$ to $14^{x}$ concave respectively, and step these out with the dividers on the plan of the development, producing 0″ to 14″ and 0‴ to 14‴. Erect normals on elevation and also on development, projecting each where they cut the elevation horizontal to the development. I have shown one such point. At 7′ on plan raise a perpendicular $7^{E}$ on elevation, carry this horizontally to development, cut this with the vertical 7″, producing $7^{ED}$; follow out this operation with each point in succession until the whole of the points are described. Then draw the curves for external and internal face moulds. When cutting these moulds be careful not to omit putting the vertical lines on the same as shown at X X, as a guide for the mason when putting on the face mould and for the fixer when fixing, this line being plumb when the stones are each in their exact position X on elevation.

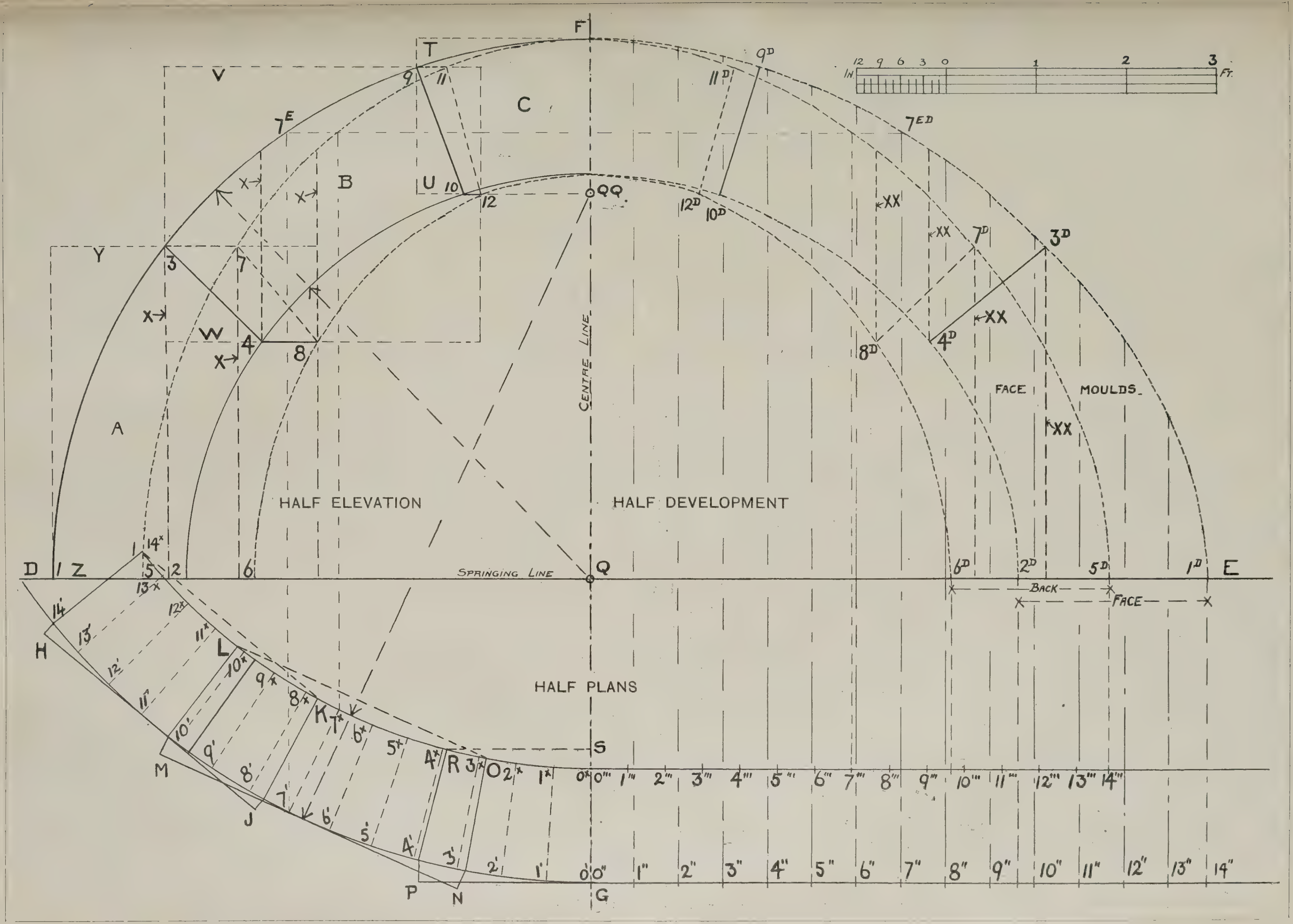
In taking off the size of stones required, consult plan and find—H I K J = 3ft. 1in. by 1ft. 5ft. and elevation Y Z = 3ft. 9in., the extremes for A.

M L O N and V W for B: P R S G being to centre line double this in length for keystone and T U.

Proceed by working as a segment of a cylinder. The arrises of joints on intrados and extrados are horizontal; consequently the joints twist.

I wish it to be particularly understood that there is no hard-and-fast law why the arch should be set out in this way. It must always lay with the architect what form the arch is to take when erected. This arch, as will be seen, appears parallel in elevation, but as a matter of fact it is not so. See development. This in appearance is elliptical, but it is impossible to set it out as such. Suppose the arch to be set out parallel on development, then on the elevation it would appear foreshortened and weak, whereas the haunches should be stronger.

*(To be continued.)*



SCIENTIFIC MASONRY; CIRCLE ON CIRCLE ARCH. BY JOHN WORNELL.

# Complete List of Contracts Open.

| DATE OF DELIVERY. | | WORK TO BE EXECUTED. | FOR WHOM. | FROM WHOM FORMS OF TENDERS MAY BE OBTAINED. |
|---|---|---|---|---|
| | | **BUILDING:** | | |
| Oct. | 15 | Greenwich—Depot Buildings | Borough Council | Borough Engineer, Town Hall, Greenwich Road, S.E. |
| ,, | 15 | Greenwich—Underground Convenience | Borough Council | Borough Engineer, Town Hall, Greenwich Road, S.E. |
| ,, | 16 | Hereford—Extension of Post-Office | Commissioners of H.M. Works, &c. | Secretary, H M. Offices of Works, Storey's Gate, S.W. |
| ,, | 16 | Hull—Thirty-two Dwellings | City Improvements Committee | J. H. Hirst, City Architect, Town Hall, Hull. |
| ,, | 16 | Dublin—Canteen Building | — | Clerk, Office of Public Works, Dublin. |
| ,, | 17 | Barrow-in-Furness—Shed | Education Committee | Education Offices, Town Hall, Barrow-in-Furness. |
| ,, | 17 | Barrow-in-Furness Removal of School | Education Committee | Education Offices, Town Hall, Barrow-in-Furness. |
| ,, | 17 | Batley, Yorks—Walls | Town Council | Borough Surveyor, Branch Road, Batley. |
| ,, | 17 | Bedlington, Northumberland—Hospital | Urban District Council | C. Brown, Surveyor, Bedlington. |
| ,, | 17 | Dewsbury—Warehouse | — | Holtom & Fox, Architects, Corporation Street, Dewsbury. |
| ,, | 17 | Resolven, Wales—Twenty Houses | S. L. Jones | J. C. Rees, Architect, Neath. |
| ,, | 17 | Embleton, Cumberland—Farm Buildings | — | E. Jackson, Civil Engineer, Whitehaven. |
| ,, | 17 | Peebles—Gasworks | Town Council | W. Buchan, Town Clerk, Peebles. |
| ,, | 19 | Malahide, &c., Dublin—Station Buildings | Gt. Northern Rlwy. Co., Ireland | W. H. Mills, Engineer-in-Chief, Amiens Street Terminus, Dublin. |
| ,, | 19 | London, W.—Firebricks, &c. | Great Western Railway Co. | Superintendent, Stores Department, Swindon |
| ,, | 19 | London, N.W.—Repairing Shed | Metropolitan Railway Co. | R. H. Selbie, Secretary, 32 Westbourne Terrrace, London, W. |
| ,, | 19 | London, W.—Bricks, &c. | Metropolitan Railway Co. | Company's Storekeeper, Neasden Station, N.W. |
| ,, | 20 | Welshpool—Villa and Cottage | Red Bank Building Estate | F. Ward, 38 High Street, Welshpool. |
| ,, | 20 | Acton, Middlesex—Engine Shed | Great Western Railway Co. | Engineer, Paddington Station, W. |
| ,, | 20 | Cheltenham—Firebricks, &c. | Gas Light & Coke Co. | R. O. Paterson, Engineer, Gasworks, Cheltenham. |
| ,, | 20 | Mansbridge, Hants—Burial Ground &c. | Parish Council | C. H. Brightiff, 13 Portland Terrace, Southampton. |
| ,, | 20 | London, W.—Extension of Boiler-house | Paddington Guardians | F. J. Smith, Architect, Parliament Mansions, Victoria Street, Westminster, S.W. |
| ,, | 20 | Slough, Bucks—Court-room | County Council | R. J. Thomas, County Surveyor, County Hall, Aylesbury. |
| ,, | 21 | Ashington, Northumberland—Additions, &c., to Bakery | Industrial Co-op. Soc., Ltd. | J. Magin, Secretary to Society, Ashington. |
| ,, | 22 | Hereford—Shedding | Corporation | J. Parker, City Surveyor, Mansion House, Hereford. |
| ,, | 22 | Bristol—School | Education Committee | La Trobe & Weston, 20 Clare Street, Bristol. |
| ,, | 23 | Leicester—Car Sheds | Tramways Committee | G. Mawbey, Engineer, Town Hall, Leicester. |
| ,, | 23 | Portsmouth—School | Education Committee | Rake & Cogswell, Architects, Prudential Buildings, Landport. |
| ,, | 23 | St. Govan's Head, near Pembroke—Coastguard Detachment | Admiralty | Civil Engineer, H.M. Dockyard, Pembroke Dock. |
| No date | | London, S.W.—Firebricks | War Office | Director of Army Contracts, War Office, Whitehall, S.W. |
| | | **ENGINEERING** | | |
| Oct. | 15 | Ipswich—Pilework, &c. | Dock Commissioners | T. Millar, 9 Thoroughfare, Ipswich. |
| ,, | 16 | Canterbury—Cable | Urban Sanitary Authority | Engineer, Electricity Works, Canterbury. |
| ,, | 19 | Warwick—Weighbridge | Guardians | F. P. Trepess, 11 Church Street, Warwick. |
| ,, | 19 | London, W.—Telegraph Instruments, &c., Electric Light, Carbons, &c. | Great Western Railway Co. | Superintendent, Stores Department, Swindon. |
| ,, | 19 | Salford—Machinery | Tramways Committee | General Manager, 32 Blackfriars Street, Salford. |
| ,, | 19 | Johannesburg—Electrical Plant | Municipal Council | Mordey & Dawbarn, 82 Victoria Street, Westminster, S.W. |
| ,, | 19 | Bristol—Heating and Ventilating Schools | Education Committee | Holbrow & Oaten, 9 Clare Street, Bristol. |
| ,, | 19 | Harrismith, South Africa—Electrical Machinery, &c. | Town Council | Mordey & Dawbarn, 82 Victoria Street, Westminster, S.W. |
| ,, | 19 | Salford—Electric Wiring | Tramways Committee | General Manager, 32 Blackfriars Street, Salford. |
| ,, | 19 | London, W.—Switchboxes, Electric Lighting Sundries, &c. | Metropolitan Railway Co. | Company's Storekeeper, Neasden Station, N.W. |
| ,, | 19 | Shipley—Sewage-Disposal Works | Urban District Council | M. Paterson, 35 Manor Row, Bradford. |
| ,, | 20 | London, W.—Extension of Boiler-house | Paddington Guardians | F. J. Smith, Architect, Parliament Chambers, Victoria Street, S.W. |
| ,, | 21 | Barmouth—Gasholder | Gas Committee | W. Belton, Engineer, Gasworks, Shrewsbury. |
| ,, | 21 | Halifax—Dynamo, Boilers, &c. | Tramways and Elec. Committee | W. M. Rogerson, Borough Electrical Engr., Foundry St, Halifax. |
| ,, | 21 | Goring, Oxon—Water-Supply Extensions | Thames Valley & Goring Water & Gas Co., Ltd. | G. H. Robus, Engineer, Mansion House Chambers, London, E.C. |
| No date | | London, S.W.—Cables, Electrical Stores, &c. | War Office | Director of Army Contracts, War Office, Whitehall, S.W. |
| | | **FURNITURE:** | | |
| Oct. | 15 | Merthyr Tydfil—Furniture | Board of Guardians | F. T. James, 134 High Street, Merthyr Tydfil. |
| No date | | London, S.W.—Bedsteads, &c. | War Office | Director of Army Contracts, War Office, Whitehall, S.W. |
| | | **IRON AND STEEL:** | | |
| Oct. | 19 | London, W.—Axles, Springs, Steel, &c. | Metropolitan Railway Co. | Company's Storekeeper, Neasden Station, N.W. |
| ,, | 19 | Colchester—Iron Fence | Guardians | C. E. White, 57 North Hill, Colchester. |
| ,, | 19 | Swindon—Fencing | Corporation | Borough Surveyor, Town Hall, Swindon. |
| ,, | 19 | London, W.—Rivets, Bolts, Nuts, Tools, &c. | Great Western Railway Co. | Superintendent of Stores Department, Swindon. |
| ,, | 20 | London, E.C.—Rails, &c. | Southern Mahratta Rly. Co., Ltd. | Secretary, Queen Anne's Gate, Westminster, S.W. |
| ,, | 21 | Adelaide, South Australia—Railway Stores | — | Chief Mechanical Engineer, Islington, South Australia. |
| ,, | 21 | London, S.W.—Gates, &c. | Fulham Borough Council | F. Wood, Borough Engineer, Town Hall, Fulham. |
| ,, | 21 | Fulham—Wrought-Iron Entrance Gates | Borough Council | F. Wood, Borough Engineer, Town Hall, Fulham. |
| No date | | London, S.W.—Anvils, Ironmongery, &c. | War Office | Director of Army Contracts, War Office, Whitehall, S.W. |
| | | **PAINTING AND PLUMBING:** | | |
| Oct. | 15 | Dewsbury—Painting, &c. | — | C. J. Abbs, Secretary, Infirmary, Dewsbury. |
| ,, | 19 | London, W.—Colours, Paints, Varnishes, Lead, &c. | Metropolitan Railway Co. | Company's Storekeeper, Neasden Station, N.W. |
| ,, | 19 | London, W.—Colours, Paints, Varnishes, &c. | Great Western Railway Co. | Superintendent, Stores Department, Swindon. |
| No date | | London, S.W.—Oils, Glassware, &c. | War Office | Director of Army Contracts, War Office, Whitehall, S.W. |
| | | **ROADS AND CARTAGE:** | | |
| Oct. | 15 | Woolwich—Brooms and 3 Slop Carts | Borough Council | F. Sumner, Borough Engineer, Maxey Road, Plumstead. |
| ,, | 15 | London, S.E.—Roadway | Southwark Union Guardians | G. D. Stevenson, 13-14 King Street, Cheapside, E.C. |
| ,, | 15 | Stockport—Street Works | Highways & Sewers Committee | J. Atkinson, Borough Surveyor, Stockport. |
| ,, | 15 | Walworth, S.E.—Concrete and Granolithic Roadway | Southwark Union Guardians | G. D. Stevenson, 13-14 King Street, Cheapside, E.C. |
| ,, | 16 | Preston, Lancs—Paving, &c. | Corporation | Borough Surveyor, Town Hall, Preston. |
| ,, | 16 | Pontypridd—Road | Urban District Council | R. P. Wilson, 66 Victoria Street, Westminster, S W. |
| ,, | 16 | Preston, Lancs—Paving, &c | Corporation | Borough Surveyor, Town Hall, Preston. |
| ,, | 17 | Leeds—Brooms | Markets Committee | Superintendent, Market, Leeds. |
| ,, | 17 | Bexhill, Sussex—Street Works | Corporation | G. Hall, Borough Surveyor, Town Hall, Bexhill. |
| ,, | 19 | London, W.—Shingle | Paddington Borough Council | E. B B. Newton, Surveyor, Town Hall, Paddington, W. |
| ,, | 19 | Bray, Ireland—Materials | Urban District Council | P. MacDonnell, Clerk, Town Hall, Bray. |
| ,, | 19 | London, N.—Kerbing, &c. | Southgate U.D.C. | C. G. Lawson, Surveyor, Council Offices, Palmer's Green, N. |
| ,, | 19 | London, W.—Brooms, Granite, &c. | Metropolitan Railway Co. | Company's Storekeeper, Neasden Station, N.W. |
| ,, | 19 | Hendon—Granite Kerb, Tar Paving, &c. | Urban District Council | S. S. Grimley, Engineer, Council Offices, Hendon. |
| ,, | 20 | Woodville, near Ashby-de-la-Zouch—Street Works | Rural District Council | G. Farmer, Clerk, Ashby-de-la-Zouch. |
| ,, | 21 | Fulham—Making-up Roadway, &c. (Section I.) | Borough Council | F. Wood, Borough Surveyor, Town Hall, Fulham. |
| ,, | 21 | Fulham—Making-up Roadway, &c. (Section III.) | Borough Council | F. Wood, Borough Surveyor, Town Hall, Fulham. |
| ,, | 22 | London, W.—Road Works | Ealing Town Council | C. Jones, Borough Engineer, Town Hall, Ealing, W. |
| Nov. | 2 | Hastings—Granite Kerb | Corporation | P. H. Palmer, Borough Engineer, Town Hall, Hastings. |
| No date | | London, S.W.—Brooms, Flags, &c. | War Office | Director of Army Contracts, War Office, Whitehall, S.W. |
| | | **SANITARY:** | | |
| Oct. | 15 | Croydon—Drain Pipes, &c. | Town Council | Borough Road Surveyor, Town Hall, Croydon. |
| ,, | 19 | Hendon—Sewer, &c. | Urban District Council | S. S. Grimley, Engineer, Council Offices Hendon. |
| ,, | 19 | London, W.—Stoneware Pipes, &c. | Metropolitan Railway Co. | Company's Storekeeper, Neasden Station, N.W. |
| ,, | 19 | London, W.—Sanitary Ware, &c. | Great Western Railway Co. | Superintendent, Stores Department, Swindon. |
| ,, | 19 | Shipley—Sewage-disposal Works | Urban District Council | M. Paterson, 35 Manor Row, Bradford. |
| ,, | 20 | Welshpool—Sewer | Red Bank Building Estate | F. Ward, 38 High Street, Welshpool. |
| ,, | 21 | Thurstonland, Yorks—Sewage-Disposal Works | Urban District Council | Haller & Machell, Engineers, Corporation Chambers, Dewsbury. |
| ,, | 26 | Woodford, Essex—Sewerage and Sewage-disposal Works | Urban District Council | W. Spinks, 20 Park Row, Leeds. |
| ,, | 27 | Canterbury—Sewer, &c. | Drainage Committee | City Engineer, Guildhall Street, Canterbury. |
| No date | | London, S.W.—Earthenware, &c. | War Office | Director of Army Contracts, War Office, Whitehall, S.W. |
| | | **TIMBER:** | | |
| Oct. | 19 | London, W.—Timber | Metropolitan Railway Co. | Company's Storekeeper, Neasden Station, N.W. |
| ,, | 19 | London, W.—Telegraph Poles and Yellow Pine | Great Western Railway Co. | Superintendent, Stores Department, Swindon. |
| No date | | London, S.W.—Timber, Woodware | War Office | Director of Army Contracts, War Office, Whitehall, S.W. |

# Trade and Craft.

### Builders' Ironmongery and Electrical Fittings.

The great feature of Messrs. Melhuish's new catalogue of ironmongery and electrical supplies is that every single article is illustrated, and illustrated very clearly. Numerous designs for knockers, letter plates, handles and other door furniture are shown, as well as bolts of all kinds, latches, casement stays, hinges, bell fittings, door locks, &c., &c. Some of the brass door bolts are very neat in appearance, such as No. 187. Among specialities we notice a patent bookcase strip which makes adjustment of the shelves easy; Hill & Hodge's patent door spring, which is specially adapted for heavy doors in public buildings; Meakin's sash opener, consisting of a simple system of cords and pulleys; Collinge's gate hinge, which has a ball and cup bearing that allows for all ordinary variations without loosing smooth and easy action; and an improved lever bolt for doors which, with one turn of the handle, releases or fastens the three bolts at bottom, top and side. Stable fittings of various kinds, ventilators, gas stoves, taps and cocks, gas fittings, grates, mantels, lavatory basins, cisterns, and closets are illustrated. The electrical section includes bells, batteries, pushes, switches, telephones and all other fittings. Some excellent diagrams are given showing the connections for bell indicator and telephone circuits. Accumulators, both large and small, are also shown. Altogether the catalogue is a very comprehensive one, and should be very useful to builders, architects and others. A copy can be obtained free on application. It should be specially noted that the prices quoted are subject to a uniform discount of 25 per cent. The address of the firm is: Messrs. R. Melhuish, Sons & Co., 84, 85 and 87, Fetter Lane, London, E.C.

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### An Improved Automatic Tipper for Sewage.

The disposal of sewage is one of the greatest difficulties with buildings in isolated situations, where there are necessarily no main sewers. The sewage may be treated in a septic tank, but the disposal of the small volume which flows from it on to the filter-bed still makes a difficulty, as invariably there is not sufficient liquid to give equal distribution over the whole area. This difficulty seems to have been grappled with successfully in an apparatus which has been brought before our notice by Mr. William E. Farrer, of Star Works, Cambridge Street, Birmingham. The apparatus consists of an automatic tipper throwing alternately on to the two halves of the bed, the great feature being that until sufficient sewage has been collected to cover the whole of one side of the bed it will not commence to work. The trouble with many automatic sprinklers is that unless they obtain a maximum supply of sewage matter, the sprinkler ceases to revolve, and the sewage trickles on to one part of the bed. This defect is entirely avoided in Mr. Farrer's apparatus. The size of the tipper is accurately gauged so that the channels are always fully charged, and the amount of head in them is such that the whole bed is successively sprayed. Another point about the section of the channels is that it ensures their being entirely drained after each successive charge. Experience has proved that with this apparatus a bed is never overdosed at one period of its working and starved at another, the distribution being always equal, thus ensuring a good effluent. As will be seen from the illustration on p. vii of this issue, the apparatus is quite simple and not likely to get out of order, nor does it require much attention. It is easily adjusted and any part may readily be taken apart or replaced should occasion require.

# Coming Events.

**Wednesday, October 14.**

INSTITUTE OF SANITARY ENGINEERS, LTD.—Meetings of Examination and Literary Committee at 3.30 p.m., General Purposes and Finance Committee at 4.15 p.m., and of Election Committee at 5.15 p m. Members' Sessional Meeting, at 7 p.m. Discussion on Mr. G. Freebairn's paper on "The Biological Treatment of Sewage: Some Facts and Figures compiled from Three Years' Practical Working of Bacteria Beds," at 7.30 p.m.

SANITARY INSTITUTE (Lectures and Demonstrations for Sanitary Officers, Part I.).—Mr. J. Wright Clarke on "Details of Plumbers' Work," at 7 p.m. Inspection and Demonstration in the "District of Islington and at the Borough Disinfecting Station," at 2 p.m , conducted by James R. Leggatt.

ARCHITECTURAL ASSOCIATION (CAMERA AND CYCLING CLUB), 56, Great Marlborough Street, W.—Mr C. H. Oakden, F.R.P.S., on "Little Known Irish Abbeys," at 7.30 p m

CARPENTERS' COMPANY (Lectures on Sanitary Building Construction).—Dr. A. Wynter Blyth on "Sanitary Arrangements of Buildings," at 7.30 p.m.

**Thursday, October 15.**

SURVEYORS' INSTITUTION.—Ordinary General Meeting at 3.15 p.m.

LONDON MASTER BUILDERS' ASSOCIATION.—Council Meeting at 4 p.m.

**Friday, October 16.**

ARCHITECTURAL ASSOCIATION.—Mr. Arthur T. Bolton and Mr. Hugh P. G. Maule on "The Day School in relation to Architectural Pupilage," at 7.30 p.m.

INSTITUTION OF MECHANICAL ENGINEERS.—Mr. H. Davey on "The Newcomen Engine," at 8 p,m.

SOUTHERN COUNTIES MASTER BUILDERS' FEDERATION.—Council Meeting in King's Rooms, Royal Pavilion, Brighton, at 12 noon. Half-yearly General Meeting at 12.30 p.m.

**Saturday, October 17.**

SANITARY INSTITUTE (Lectures and Demonstrations for Sanitary Officers, Part I.).—Inspection and Demonstration at Battersea Municipal Milk Depot and Disinfecting Station at 3 p.m., conducted by Mr. G. F. MacCleary.

JUNIOR INSTITUTION OF ENGINEERS.—Visit to the New Vauxhall Bridge Works at 3 p.m.

**Monday, October 19.**

SANITARY INSTITUTE (Lectures and Demonstrations for Sanitary Officers, Part I.).—Mr. W. C. Tyndale on "Calculations, Measurements, and Plans and Sections," at 7 p.m.

**Wednesday, October 21.**

SANITARY INSTITUTE (Lectures and Demonstrations for Sanitary Officers, Part I.).—Inspection and Demonstration at a Bakehouse.

ARCHITECTURAL ASSOCIATION (Discussion Section).—Meeting at 7.30 p.m.

# Bankruptcies.

[Abbreviations: R.O.—receiving order; P.E.—public examination; C.C.—county court; O.R.—official receiver; Adj.—Adjudication.]

DURING THE WEEK ending Oct. 9th twenty-seven failures in the building and timber trades in England and Wales were gazetted.

J. BULLEN, builder, Guildford. R.O. Oct. 3rd.

J. CANNY, joiner and builder, Sheffield. R.O. Oct. 1st.

A. F. WILLIAMS, engineer, Ilford. R.O. Oct. 2nd.

T. HUGHES, builder and contractor, New Ferry. Unsecured liabilities £2,213; assets £358.

R. LEWIS, painter and paperhanger, Wolverhampton. Liabilities £70; assets nil

E. AMES, timber merchant, Birmingham. R.O. Sept. 30th.

W. E. KEYS, builder, Tooting. Adj. Oct. 2nd. Liabilities £2,000.

M'DOWALL & NEILSON, timber merchants, &c., Glasgow. Liabilities £99,000; assets £6,972.

W. J. ASHTON, builder, Whitton, near Hounslow. P.E., Brentford Town Hall, Nov. 6th, at 12.

A. S. WALKER & H. SLOAN, plumbers, Newcastle-on-Tyne. R.O Oct. 1st.

A. JENKINS, builder and contractor, Southwell. R.O. and adj. Sept. 29th.

J. H. OSBORNE, builder, Yatton. R.O. and adj. Oct. 2nd P.E., Bristol Guildhall, Oct. 23rd, at 12.

C. CORRIGAN, builder and decorator, Plumstead. R.O. and adj. Sept. 28th.

F. PARKER, builder and contractor, Spalding. First meeting, Law Courts, Peterborough, Oct. 16th, at 11.45. P.E., same, at 12.

H. W. JONES, builder, Aldenham. First meeting, O.R.'s, 14, Bedford Row, W.C., Oct. 15th, at 11.30. P.E., St. Albans C.C., Nov. 3rd, at 12.

J. VERDON, builder, Radlett. First meeting, O.R.'s, 14, Bedford Row, W.C., Oct. 16th, at 12. P.E., St. Albans C.C., Nov. 3rd, at 12.

E. WADE, builder, London, S.W. Gross liabilities £134,177; £122,220 fully secured; £11,930 expected to rank; assets estimated to produce a surplus of £16,748.

T. WILLIAMS, electrical engineer, Cardiff. Adj. Sept. 28th. First meeting, 117, St. Mary Street, Cardiff, Oct. 15th, at 11 30. P.E., Cardiff Town Hall, Nov. 3rd, at 11.

G. R. H. WALES, house decorator and builder, London. Gross liabilities £33,302; £6,372 unsecured; assets £7,017; surplus £638, subject to realization.

C. LATHAM & R. NORBURY, timber merchants, Liverpool, Manchester and London, E.C. R.O. and adj. Oct. 1st. First meeting, O.R.'s, Liverpool, Oct. 15th, at 2.30. P.E., Liverpool C.C., Oct. 29th, at 11.

# Current Market Prices

## FORAGE.

| | | £ | s. | d. | £ | s. | d |
|---|---|---|---|---|---|---|---|
| Beans | per qr. | 1 | 14 | 0 | 2 | 0 | 0 |
| Clover, best | per load | 4 | 5 | 0 | 4 | 10 | 0 |
| Hay, best | do. | 3 | 12 | 6 | 4 | 0 | 0 |
| Sainfoin mixture | do. | 3 | 15 | 0 | 4 | 5 | 0 |
| Straw | do. | 1 | 10 | 0 | 2 | 0 | 0 |

## OILS AND PAINTS.

| | | £ | s. | d. | £ | s. | d |
|---|---|---|---|---|---|---|---|
| Castor Oil, French | pet cwt. | 1 | 0 | 5 | | — | |
| Colza Oil, English | do. | 1 | 3 | 6 | | — | |
| Copperas | per ton | 2 | 0 | 0 | | — | |
| Lard Oil | per cwt. | 2 | 15 | 0 | 2 | 17 | 0 |
| Lead, white, ground, carbonate | do. | 1 | 4 | 10 | | — | |
| Do. red | do. | 1 | 0 | 4½ | | | |
| Linseed Oil, barrels | do. | 0 | 18 | 1½ | | — | |
| Petroleum, American | per gal. | 0 | 0 | 6⅛ | 0 | 0 | 7 |
| Do. Russian | do. | 0 | 0 | 4⅝ | 0 | 0 | 4⅞ |
| Pitch | per barrel | 0 | 8 | 0 | | — | |
| Shellac, orange | per cwt. | 9 | 7 | 6 | 9 | 10 | 0 |
| Soda, crystals | per ton | 3 | 2 | 6 | 3 | 5 | 0 |
| Tallow, Town | per cwt. | 1 | 6 | 3 | 1 | 6 | 6 |
| Tar, Stockholm | per barrel | 0 | 19 | 6 | | — | |
| Turpentine | per cwt. | 2 | 3 | 0 | | — | |

## METALS.

| | | £ | s. | d. | £ | s. | d |
|---|---|---|---|---|---|---|---|
| Copper, sheet, strong | per ton | 71 | 0 | 0 | | — | |
| Iron, Staffs., bar | do. | 6 | 5 | 0 | 6 | 7 | 6 |
| Iron, Galvanised Corrugated sheet | per ton | 11 | 0 | 0 | 11 | 5 | 0 |
| Lead, pig, Soft Foreign | do. | 11 | 3 | 9 | 11 | 2 | 6 |
| Do. do. English common brands | do. | 11 | 7 | 6 | | — | |
| Do. sheet English 3lb. per sq. ft and upwards | do. | 14 | 0 | 0 | | — | |
| Do. pipe | do. | 15 | 0 | 0 | | — | |
| Nails, cut clasp, 3in. to 6in. | do. | 9 | 5 | 0 | | — | |
| Do. floor brads | do. | 9 | 0 | 0 | | — | |
| Steel, Staffs., Girders and Angles | do. | 5 | 15 | 0 | 7 | 2 | 6 |
| Do. do. Mild bars | do. | 6 | 5 | 0 | 6 | 15 | 0 |
| Tin, Foreign | do. | 114 | 7 | 6 | 114 | 17 | 6 |
| Do. English ingots | do. | 118 | 0 | 0 | 119 | 0 | 0 |
| Zinc, sheets, Silesian | do. | 23 | 0 | 0 | | — | |
| Do. do. Vielle Montaigne | do. | 23 | 5 | 0 | | — | |
| Do. Spelter | do. | 20 | 7 | 6 | 21 | 10 | 0 |

## TIMBER.

### SOFT WOODS.

| | | £ | s. | d. | £ | s. | d |
|---|---|---|---|---|---|---|---|
| Fir, Dantzic and Memel | per load | 1 | 13 | 0 | 3 | 0 | 0 |
| Pine, Quebec, Yellow | do. | 5 | 5 | 0 | 6 | 5 | 0 |
| Do. Pitch | do. | 2 | 12 | 0 | 3 | 3 | 0 |
| Laths, log, Dantzic | per fath. | 4 | 10 | 0 | 5 | 10 | 0 |
| Do. St. Petersburg | do. | 7 | 5 | 0 | | — | |
| Deals, St. Petersburg, Yellow 2nd, 2½×7 | do. | 9 | 5 | 0 | | — | |
| Do. do. do. do. 3×9 | do. | 9 | 15 | 0 | | — | |
| Do. do. do. do. 3×9 | do. | 9 | 0 | 0 | | — | |
| Do. do. do. do. 3×7 | do. | 8 | 5 | 0 | | — | |
| Do. do. do. do. 2½×7 | do. | 9 | 10 | 0 | | — | |
| Do. do. White, 1st, 3×11 | do. | 7 | 10 | 0 | | — | |
| Do. Nederkalix, Yellow, 2nd, 4×8 | do. | 10 | 0 | 0 | | — | |
| Do. Pernoviken do. 1st, 2½×7 | do. | 9 | 5 | 0 | | — | |
| Do. do. do. 2nd, do. | do. | 9 | 5 | 0 | | — | |
| Do. Archangel, dry White, 1st, 3×11 | do. | 15 | 0 | 0 | | — | |
| Do. do. do. do. 3×11 | do. | 12 | 0 | 0 | | — | |
| Do. do. do. do. 3×9 | do. | 11 | 15 | 0 | | — | |
| Do. do. do. do. do. | do. | 12 | 0 | 0 | | — | |
| Do. do. Yellow, 2nd Walneff's, 3×9 | do. | 17 | 10 | 0 | | — | |
| Do. do. do. 3rd, do. 3×11 | do. | 13 | 15 | 0 | | — | |
| Do. do. do. do. 3×9 | do. | 13 | 15 | 0 | | — | |
| Do. Abo, Unsorted Yellow, 2½×7 | do. | 9 | 10 | 0 | | — | |
| Do. do. do. do. do. | do. | 9 | 5 | 0 | | — | |
| Do. Yttersfors, Yellow, 3rd, 2½×7 | do. | 10 | 0 | 0 | | — | |
| Do. Sundevall, Yellow Sund, 1st, 3×11 | do. | 24 | 10 | 0 | | — | |
| Do. do. do. do. 2nd, 3×11 | do. | 24 | 10 | 0 | | — | |
| Do. Björneborg, Yellow, 4th, 2½×9 | do. | 10 | 0 | 0 | | — | |
| Do. do. do. do. 2½×7 | do. | 8 | 15 | 0 | | — | |
| Do. do. do. do. do. | do. | 8 | 0 | 0 | | — | |
| Do. Riga, Unsorted White, 3×10 | do. | 7 | 10 | 0 | | — | |
| Do. do. White, 2nd, 3×9 | do. | 8 | 0 | 0 | | — | |
| Do. do. do. 3rd, do. | do. | 8 | 0 | 0 | | — | |
| Do. Quebec, Yellow Pine, 3rd, 3×11 | do. | 13 | 0 | 0 | | — | |
| Battens, all kinds | do. | 6 | 10 | 0 | 13 | 10 | 0 |
| Flooring Boards 1in. prepared, 1st | per square | 0 | 8 | 3 | | .. | |
| Do. 2nd | do. | 0 | 8 | 3 | 0 | 9 | 6 |
| Do. 3rd | do. | 0 | 6 | 6 | 0 | 8 | 3 |
| Do. 2nd | do. | 0 | 10 | 3 | 9 | 6 | 0 |
| Do. 3rd &c. | do. | 0 | 8 | 6 | | — | |

### HARD WOODS.

| | | £ | s. | d. | £ | s. | d |
|---|---|---|---|---|---|---|---|
| Ash, Quebec | per load | 3 | 12 | 6 | | — | |
| Birch, Quebec | do. | 3 | 12 | 6 | 3 | 17 | 0 |
| Box, Turkey | per ton | 15 | 0 | 0 | 20 | 0 | 0 |
| Cedar, Cuba | per ft. sup. | 0 | 0 | 5¼ | | — | |
| Do. Honduras | do. | 0 | 0 | $5\frac{31}{32}$ | | — | |
| Do. Tobasco | do. | 0 | 0 | $4\frac{31}{32}$ | | — | |
| Elm, Quebec | per load | 4 | 0 | 0 | | — | |
| Mahogany, Average Price for Cargo, Honduras | per ft. sup. | 0 | 0 | $6\frac{1}{32}$ | | — | |
| Do. African | do. | 0 | 0 | 4⅜ | | — | |
| Do. St. Domingo | do. | 0 | 0 | $3\frac{29}{32}$ | | — | |
| Do. Cuba | do. | 0 | 0 | $5\frac{13}{16}$ | 0 | 0 | |
| Do. Lagos | do. | 0 | 0 | $3\frac{3}{16}$ | | — | |
| Do. Benin | do. | 0 | 0 | $4\frac{15}{16}$ | 0 | 0 | $5\frac{21}{32}$ |
| Do. Tobasco | do. | 0 | 0 | $6\frac{11}{32}$ | 0 | 0 | 8¼ |

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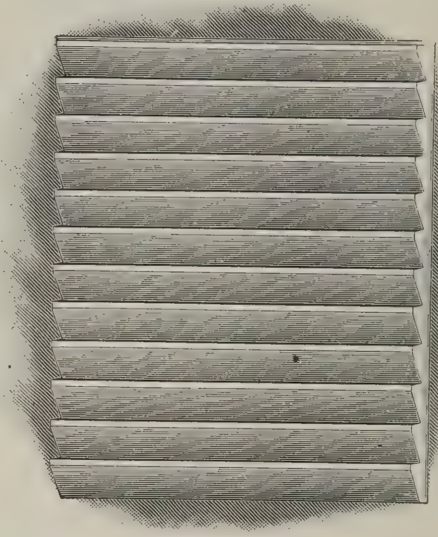

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# List of Competitions Open.

| DATE OF DELIVERY. | DESIGNS REQUIRED. | AMOUNT OF PREMIUM. | DEPOSIT REQUIRED FOR CONDITIONS, &c. | BY WHOM ADVERTISED. |
|---|---|---|---|---|
| Oct. 26 | Harrogate—Iron & Glass Pump-room & Colonnade | —— | £1 | F. Bagshaw, Borough Engineer, Municipal Office, Harrogate. |
| Nov. 9 | Kilmarnock—Shops and Workmen's Dwellings .. | £15 15s., £10 10s. £5. 5s. | —— | R. Blackwood, Burgh Surveyor, Market Bridge, Kilmarnock, Scotland. |
| " 9 | Skewen, Neath—Public Library .. .. .. | £10 10s. | —— | S. Jones, Clerk, Old Road, Skewen, Neath. |
| " 14 | Tamworth—Public Library .. .. .. .. | £20, £10, £5 | —— | J. Matthews, Town Clerk, Bolebridge Street, Tamworth. |
| " 21 | Sunderland—Additions & Alterations to Town Hall | £100, £50, £25. | £5. | J. W. Moncur, Borough Engineer, Town Hall, Sunderland. |
| Dec. 1 | Wakefield—Reconstruction of Cattle Market .. | £52 10s., £26 5s. | £2. | E. R. Langhorne, Clerk to Governors of Charities, Wakefield. |
| 1904<br>Mar. 31 | Vienna—Machinery to Lift Boats on Canal .. | 100,000, 75,000 & 50,000 kronen. | —— | Austro-Hungarian Consulate-General, 22 Laurence Pountney Lane, E.C. |
| No date | Liverpool—Cotton Exchange .. .. .. .. | —— | £2 2s. | P. Brown, Secretary, Liverpool Cotton Association, Ltd., 50 Brown's Buildings, Liverpool. |
| " | Glasgow—Branch Library .. .. .. .. | —— | —— | J. D. Marwick, Town Clerk, City Chambers, Glasgow. |
| " | Copenhagen—Rebuilding of Christiansborg Castle | £550. | —— | Folkething, Copenhagen. |
| " | Birkdale—Library .. .. .. .. .. | £50, £30, £15. | —— | Clerk, Council Offices, Birkdale. |

# Tenders.

*Information from accredited sources should be sent to "The Editor" at latest by noon on Monday if intended for publication in the following Wednesday's issue. Results of Tenders cannot be accepted unless they contain the name of the Architect or Surveyor for the work.*

*Addressed postcards on which lists of tenders may be stated will be sent post free on application to the Manager,* BUILDERS' JOURNAL, 9, *East Harding Street, E.C.*

**Aultbea (Scotland).**—For the erection of a pier at Aird Point, Aultbea, on Loch Ewe, Ross-shire, containing about 1,313 cub. yds. of concrete. 3,599 cub. ft. greenheart, 4,533 cub. ft. creosoted pitch-pine, 1.075 cub. ft. larch planking, with necessary pile shoes, bolts, and other material. Mr. Manners, engineer, 12, Lombard Street, Inverness:—

| | | | |
|---|---|---|---|
| A. Nicholson, Elgin .. .. .. .. | £6,638 | 6 | 6 |
| S. Baikie, Stromness .. .. .. .. | 5,434 | 2 | 0 |
| Mackenzie & McLeod, Stornoway .. | 5,072 | 0 | 0 |
| W. Petrie, Grangemouth .. .. | 5,067 | 10 | 6 |
| E. & D. Stewart, Ballachulish .. .. | 5,067 | 1 | 7 |
| R. Young & Co., Edinburgh .. .. | 4,977 | 0 | 2 |
| G. Halliday, Rothesay .. .. .. .. | 4,891 | 0 | 10 |
| W. Kennedy, Partick .. .. .. .. | 4,831 | 17 | 9 |
| Stirling & Kinniburgh, Glasgow .. | 4,570 | 9 | 4 |
| W. Alexander & Co., Inverness .. | 4,399 | 0 | 0 |
| J. McNally, Cookstown .. .. .. | 4,297 | 13 | 0 |
| A. & J. Mackenzie, Gairloch .. .. | 4.295 | 2 | 1 |
| J. Ross, Invergordon .. .. .. .. | 4,166 | 16 | 10 |
| Morrison & MacIntyre, Oban .. .. | 4,065 | 9 | 9 |
| T. Macdonald, Inverness .. .. .. | 3,950 | 7 | 8 |
| R. Fraser, Inverness .. .. .. .. | 3,898 | 9 | 1 |
| C. Mackay, Inverness .. .. .. .. | 3,895 | 18 | 6 |
| R. C. Brebner & Co.,* Edinburgh .. | 3,758 | 15 | 7 |

* Accepted subject to adjustment of details.

**Barry (Glamorgan).**—For the erection of a central public library, Holton Road, for the urban district council. Messrs. C. E. Hutchinson & E H. Payne, A.R.I.B.A., architects, 11, John Street, Bedford Row, London, W.C.:—

| | | | | | A | | |
|---|---|---|---|---|---|---|---|
| Davies & Francis, Pontlottyn | £9,287 | 10 | 0 | .. | £9,189 | 11 | 0 |
| J. Prout, Barry .. .. .. | 7,745 | 10 | 6 | .. | 7,620 | 5 | 0 |
| H. S. Rendell, Barry .. .. | 7,624 | 15 | 0 | .. | 7,507 | 12 | 0 |
| Lloyd & Tape, Barry .. .. | 7,600 | 0 | 0 | .. | 7,554 | 0 | 0 |
| A. R. Coles, Plymouth .. | 7,465 | 17 | 7 | .. | 7,350 | 15 | 2 |
| Stephens, Bastow & Co., Ltd., Bristol .. .. .. | 7.413 | 0 | 0 | .. | 7.312 | 0 | 0 |
| Lattey & Co., Ltd., Cardiff | 7.362 | 14 | 8 | .. | 7,212 | 14 | 8 |
| W. Britton, Barry .. .. | 7,307 | 2 | 8 | .. | 7,228 | 4 | 2 |
| J. Gibson, Cardiff .. | 7,162 | 0 | 0 | .. | 7,[illegible]68 | 0 | 0 |
| Watkin Williams,* Cardiff | 6,900 | 0 | 0 | .. | 6,830 | 0 | 0 |

* Accepted. A. Deduction for Blue Forest of Dean.

**Burnham (Somerset).**—For the erection of a malt-house for Messrs. Holt Brothers, Burnham Brewery. Mr. F. W. Gardiner, architect and surveyor, Barton Street, Bath. Quantities by Messrs. Amor & Underwood, Northumberland Buildings, Bath:—

| | |
|---|---|
| W. Webb, Bath .. .. .. .. .. | £3,777 |
| Hayward & Wooster, Bath .. .. .. | 3,677 |
| A. J. Beaven, Bristol .. .. .. .. .. | 3,400 |
| J. Long & Lons, Bath .. .. .. .. .. | 3,321 |
| E. Chancellor & Son,* Bath .. .. .. .. | 3,249 |
| A. J. Spiller,† Taunton .. .. .. .. .. | 2,833 |

* Accepted. † Withdrawn.

**Burslem.**—For completing alterations already partly executed at the North Road Board Schools:—

| | |
|---|---|
| W. Grant & Sons .. .. .. .. .. .. | £1,400 |
| G. R. Wood* .. .. .. .. .. .. .. | 1,350 |

* Accepted.

**Cheadle (Cheshire).**—For the erection of shops, for Messrs. Burgons, Ltd. Mr. Edward Hewitt, architect, Temple Chambers, Brazenose Street, Manchester. Quantities by Mr. Frank Hewitt, 33, Brazenose Street, Manchester:—

| | |
|---|---|
| J. Hibbert .. .. .. .. .. .. .. .. | £3,325 |
| Macfarlane & Son .. .. .. .. .. .. | 3,295 |
| W. L. Adkinson .. .. .. .. .. .. .. | 3,156 |
| Padmore & Sons .. .. .. .. .. .. | 3,080 |
| Burgess & Galt* .. .. .. .. .. .. | 3,033 |

* Accepted.

**Dublin.**—For the erection of a pumping station, including a dwelling-house and various auxiliary works on land at the west end of the Pigeon House Road, in the city of Dublin, for the Corporation of Dublin:—

| | |
|---|---|
| J. & W. Stewart, Ltd., Belfast .. .. .. | £34,600 |
| J. & P. Good, Ltd., Dublin .. .. .. .. | 32,500 |
| H. & J. Martin, Ltd.,* Upper Grand Canal, Dublin and Belfast .. .. .. .. .. | 29,466 |

[Note.—One other tender was received, but not being in proper order was not opened.]

* Accepted.

**Epsom.**—For the erection of destructor buildings, with shaft and other works connected therewith, at their sewage farm in Hook Road, Epsom, near the site of the existing pumping station, for the Epsom Urban District Council. Mr. Edward R. Capon, surveyor:—

Buildings.

| | | | |
|---|---|---|---|
| Myles & Warner, Stalybridge .. .. | £1,982 | 4 | 3 |
| Meldrum Brothers, Manchester .. | 1,867 | 12 | 6 |
| J. Wilson .. .. .. .. .. .. .. | 1,707 | 0 | 0 |
| Denton Lee, Pocklington .. .. .. | 1,675 | 0 | 0 |
| D. Stewart, Wallington .. .. .. | 1,658 | 0 | 0 |
| Knight & Son, Tottenham .. .. .. | 1 624 | 0 | 0 |
| W. Wallis, Balham, S.W. .. .. .. | 1,595 | 0 | 0 |
| W. Smith & Son, Croydon .. .. | 1,587 | 0 | 0 |
| Cropley Brothers, Epsom .. .. .. | 1,585 | 0 | 0 |
| J. Ferguson, Holborn .. .. .. .. | 1,578 | 0 | 0 |
| Radford & Greaves, Derby .. .. | 1.483 | 9 | 4 |
| Roll & Taylor,* Epsom .. .. .. | 1,474 | 0 | 0 |

[Surveyor's approximate estimate, £1,450.]

Shaft.

| | | | |
|---|---|---|---|
| Myles & Warner .. .. .. .. .. .. | £418 | 6 | 9 |
| J. Wilson .. .. .. .. .. .. .. .. | 390 | 0 | 0 |
| D. Stewart .. .. .. .. .. .. .. .. | 360 | 0 | 0 |
| J. Ferguson .. .. .. .. .. .. .. | 360 | 0 | 0 |
| W. Smith & Son .. .. .. .. .. .. | 350 | 0 | 0 |
| Cropley Brothers .. .. .. .. .. .. | 349 | 0 | 0 |
| W. Wallis .. .. .. .. .. .. .. .. | 335 | 10 | 0 |
| Denton Lee .. .. .. .. .. .. .. | 335 | 0 | 0 |
| Meldrum Brothers .. .. .. .. .. .. | 330 | 0 | 0 |
| Alphons Custodis Co. .. .. .. .. | 319 | 0 | 0 |
| Radford & Greaves .. .. .. .. .. | 299 | 10 | 0 |
| Knight & Son .. .. .. .. .. .. .. | 299 | 0 | 0 |
| Roll & Taylor* .. .. .. .. .. .. .. | 295 | 0 | 0 |

[Surveyor's approximate estimate, £339.]

[Note.—The Universal Engineering Co., of Nottingham, submitted a tender for a chimney to a different section of their own, showing firebrick lining to top of shaft for £290.]

* Accepted.

**Hadley Wood (Middlesex).**—For the erection of ladies' bijou residence on the Hadley Wood Estate. Mr. A. Kingwell, architect, Hadley Wood:—

| | | | |
|---|---|---|---|
| G. Johnson .. .. | £3,589 | C. Wheeler .. .. | £2.972 |
| A. Mitchell .. .. | 3,510 | F. G. Minter .. .. | 2,884 |
| Sprossam & Babb .. | 3,438 | Hunt & Co. .. .. | 2,863 |
| L. & H. Patman .. | 3,100 | S. Warboys .. .. | 2,729 |
| A. Fairhead .. .. | 3,093 | J. Barker .. .. .. | 2,727 |

**Ilford.**—For the erection of a new post-office at Ilford, for H.M. Office of Works, &c:—

| | | |
|---|---|---|
| J. C. Garbett .. .. .. .. .. .. .. | £4,570 | 0 |
| J. Ferguson & Co. .. .. .. .. .. | 4 500 | 0 |
| J. Guttridge .. .. .. .. .. .. .. | 4,482 | 0 |
| T. Bendon .. .. .. .. .. .. .. | 4,449 | 0 |
| S. E. Moss & Co. .. .. .. .. .. | 4,250 | 0 |
| Hammond & Miles .. .. .. .. .. | 4,185 | 10 |
| B. E. Nightingale .. .. .. .. .. | 4,100 | 0 |
| F. Willmott .. .. .. .. .. .. .. | 4,074 | 0 |
| Foster Brothers .. .. .. .. .. .. | 4,063 | 0 |
| T. Almond & Son .. .. .. .. .. | 4.000 | 0 |
| S. Parmenter .. .. .. .. .. .. | 3,999 | 0 |
| E. Brown & Son .. .. .. .. .. .. | 3,997 | 10 |
| F. Gowen .. .. .. .. .. .. .. | 3,997 | 0 |
| Perry Brothers .. .. .. .. .. .. | 3,9[illegible]9 | 0 |
| C. Ansell* .. .. .. .. .. .. .. | 3,939 | 0 |
| J. Chessum & Sons .. .. .. .. .. | 3,700 | 0 |

* Accepted.

**London.**—For the erection of halls and other improvements at Creek Road School, Deptford for the London School Board. Mr. T. J. Bailey, architect, Board's offices, Embankment, E.C.:—

| | | | |
|---|---|---|---|
| Staines & Son .. .. .. .. .. | £3,596 | 0 | 0 |
| Martin, Wells & Co., Ltd. .. .. .. | 3,417 | 0 | 0 |
| W. Akers & Co. .. .. .. .. .. | 3,252 | 0 | 0 |
| J. Smith & Son Ltd. .. .. .. .. | 3,122 | 0 | 0 |
| Treasure & Sons .. .. .. .. | 3.055 | 0 | 0 |
| E P. Bulled & Co. .. .. .. .. | 2,972 | 0 | 0 |
| Rice & Son .. .. .. .. .. .. | 2,917 | 0 | 0 |
| Thomas & Edge .. .. .. .. .. | 2.915 | 0 | 0 |
| Johnson & Co. .. .. .. .. .. | 2,906 | 0 | 0 |
| J. Greenwood, Ltd. .. .. .. .. | 2,895 | 0 | 0 |
| J. Garrett & Son .. .. .. .. .. | 2,884 | 3 | 7 |
| T. D. Leng .. .. .. .. .. .. | 2,742 | 0 | 0 |
| General Builders, Ltd.* .. .. | 2,617 | 0 | 0 |

* Recommended for acceptance.

**London.**—For the erection of senior mixed school, Duncombe Road, Upper Holloway, for the London School Board. Mr. T. J. Bailey, architect, Board's Offices, Embankment, E.C.:—

| | |
|---|---|
| G. S. S. Williams & Son .. .. .. .. | £11,888 |
| W. Gregar & Son .. .. .. .. .. .. | 11,572 |
| Killby & Gayford .. .. .. .. .. .. | 11,510 |
| Patman & Fotheringham, Ltd. .. .. .. | 11.473 |
| J Allen & Sons, Ltd. .. .. .. .. .. | 11,406 |
| C. Miskin & Sons .. .. .. .. .. .. | 11,375 |
| J. Simpson & Son .. .. .. .. .. .. | 11,341 |
| J. Grover & Son .. .. .. .. .. .. | 11,330 |
| A. Porter .. .. .. .. .. .. .. .. | 11,055 |
| Perry & Co. .. .. .. .. .. .. .. | 10,967 |
| E. Lawrence & Sons .. .. .. .. .. | 10,899 |
| T. L. Green .. .. .. .. .. .. .. | 10,766 |
| F. Gough & Co. .. .. .. .. .. .. | £10,655 |
| J. & M. Patrick .. .. .. .. .. .. | 10,595 |
| Treasure & Son .. .. .. .. .. .. | 10,571 |
| L. H. & R. Roberts .. .. .. .. .. | 10,427 |
| J. Chessum & Sons .. .. .. .. .. | 10,354 |
| C. Dearing & Son* .. .. .. .. .. .. | 10,150 |

* Recommended for acceptance.

**London.**—For the erection of a special school for mentally defective children, Kennington Road, for the London School Board. Mr. T. J. Bailey, architect, Board's Offices, Embankment, E.C.:—

| | | | |
|---|---|---|---|
| Martin, Wells & Co., Ltd... .. .. | £3,550 | 0 | 0 |
| Spencer, Santo & Co., Ltd. .. .. | 3,529 | 0 | 0 |
| J. Marsland & Sons .. .. .. .. | 3,421 | 0 | 0 |
| Rice & Son .. .. .. .. .. .. | 3,367 | 0 | 0 |
| E. P. Bulled & Co. .. .. .. .. | 3,336 | 10 | 5 |
| W. J. Mitchell & Son .. .. .. .. | 3,307 | 0 | 0 |
| J. Garrett & Son .. .. .. .. .. | 3,288 | 13 | 10 |
| Johnson & Co. .. .. .. .. .. | 3,261 | 0 | 0 |
| W. Smith & Son .. .. .. .. .. | 3,261 | 0 | 0 |
| W. Akers & Co. .. .. .. .. .. | 3,238 | 0 | 0 |
| E. Triggs .. .. .. .. .. .. | 3,210 | 0 | 0 |
| General Builders, Ltd. .. .. .. | 3,181 | 0 | 0 |
| J. Appleby & Sons .. .. .. .. | 3,138 | 0 | 0 |
| J. & M. Patrick .. .. .. .. .. | 3,124 | 0 | 0 |
| T. D. Leng* .. .. .. .. .. .. | 3,098 | 0 | 0 |

* Recommended for acceptance.

**London.**—For the erection of a special school for mentally defective children and a science-room at the Goodrich Road School, East Dulwich, for the London School Board. Mr. T. J. Bailey, architect, Board's Offices, Embankment, E.C.:—

| | | |
|---|---|---|
| Holliday & Greenwood, Ltd... .. .. | £4,603 | 0 |
| J. Smith & Sons, Ltd. .. .. .. .. .. | 4,500 | 0 |
| W. Downs .. .. .. .. .. .. .. .. | 4,499 | 0 |
| E. Triggs .. .. .. .. .. .. .. .. | 4,490 | 0 |
| Stimpson & Co. .. .. .. .. .. .. | 4,459 | 0 |
| E. P. Bulled & Co. .. .. .. .. .. | 4,449 | 0 |
| W. J. Mitchell & Son .. .. .. .. .. | 4,433 | 0 |
| Martin, Wells & Co., Ltd. .. .. .. | 4,413 | 0 |
| Rice & Son .. .. .. .. .. .. .. | 4,366 | 0 |
| J. Garrett & Son .. .. .. .. .. .. | 4,342 | 6 |
| J. & C. Bowyer .. .. .. .. .. .. | 4,335 | 0 |
| W. Smith & Son .. .. .. .. .. .. | 4,255 | 0 |
| J. Appleby & Sons .. .. .. .. .. | 4,121 | 0 |
| T. D. Leng* .. .. .. .. .. .. .. | 4,087 | 0 |
| W. Akers & Co. .. .. .. .. .. .. | 3,611 | 0 |

NOTE.—After the tenders were opened a letter was received from Akers & Co. stating that they had made an error of £457 in their additions, and that the total of their tender should have been £4,068. The committee did not think it advisable, under the circumstances, to accept the amended tender, and recommend the acceptance of the second lowest tender as above.

* Recommended for acceptance.

**London, E.C.**—For rebuilding 29, Newgate Street and 7, Rose Street, London, for Mr. W. Straker. Mr. H. G. Gribble, architect, Woking. Quantities by Messrs. J. Rider, Hunt & Co., 181, Queen Victoria Street, E.C.:—

| | |
|---|---|
| Spencer, Santo & Co. .. .. .. .. .. | £5,000 |
| Sims & Woods .. .. .. .. .. .. .. | 5,000 |
| Holloway Brothers .. .. .. .. .. .. | 4,977 |
| Patman & Fotheringham .. .. .. .. | 4,923 |
| Johnson & Son,* Leicester .. .. .. .. | 4,860 |

* Accepted subject to modification.

**London, E.**—For drainage and sanitary works at Gill Street School, Limehouse, for the London School Board. Mr. T. J. Bailey, architect, Board's Offices, Embankment, E.C.:—

| | | |
|---|---|---|
| Ashby Brothers .. .. .. .. .. .. | £2,564 | 0 |
| Johnson & Co. .. .. .. .. .. .. | 2,530 | 0 |
| G. Parker .. .. .. .. .. .. .. | 2,449 | 0 |
| J. Willmott & Sons .. .. .. .. .. | 2,222 | 0 |
| Rice & Son .. .. .. .. .. .. .. | 2,130 | 0 |
| J. & C. Bowyer .. .. .. .. .. .. | 2,079 | 0 |
| J. Peattie .. .. .. .. .. .. .. | 1,998 | 0 |
| G. S. S. Williams & Son .. .. .. .. | 1.947 | 0 |
| R. P. Beattie* .. .. .. .. .. .. .. | 1,909 | 16 |

* Recommended for acceptance.

**London.**—For improvements to girls' school, Calvert Road School, Greenwich, for the London School Board. Mr. T. J. Bailey, architect, Board's Offices, Embankment, E.C.:—

| | | | |
|---|---|---|---|
| E. B. Tucker .. .. .. .. .. .. | £2,365 | 0 | 0 |
| Martin, Wells & Co., Ltd... .. .. | 2,188 | 0 | 0 |
| H. Leney & Son .. .. .. .. .. | 2,083 | 0 | 9 |
| Rice & Son .. .. .. .. .. .. | 2,019 | 0 | 0 |
| Holliday & Greenwood, Ltd. .. .. | 1,943 | 0 | 0 |
| W. J. Mitchell & Son .. .. .. .. | 1,897 | 0 | 0 |
| E. P. Bulled & Co. .. .. .. .. | 1,889 | 0 | 0 |
| W. Akers & Co. .. .. .. .. .. | 1,865 | 0 | 0 |
| J. & C. Bowyer .. .. .. .. .. | 1,859 | 0 | 0 |
| H. Groves .. .. .. .. .. .. | 1,794 | 0 | 0 |
| Thomas & Edge .. .. .. .. .. | 1,786 | 0 | 0 |
| J. Smith & Sons, Ltd. .. .. .. .. | 1,756 | 0 | 0 |
| J. Garrett & Son .. .. .. .. .. | 1,717 | 8 | 6 |
| T. G. Leng* .. .. .. .. .. .. | 1,649 | 0 | 0 |

* Recommended for acceptance.

(*Continued on* p. xviii.)

**Advertisement Aphorism for the Week.**

*The* Builders' Journal *has no waste news.*

*The people who buy it take it home and read it from cover to cover.*

# Appointments Wanted.

ARCHITECT'S and SURVEYOR'S ASSISTANT (23), desires change. Working drawings, details, fair knowledge quantities, surveying, levelling. Moderate terms. Good reference. North England preferred—J. B., 22, Stanley Street, Haxby Road, York.

ARCHITECT'S and SURVEYOR'S ASSISTANT (22) desires ENGAGEMENT. 6 years' experience. Working drawings, details, good knowledge quantities, surveying. Moderate salary. Good references. —Box 2603, Builders' Journal Office, 9, East Harding Street, Fetter Lane, E.C.

ARCHITECT'S DRAUGHTSMAN of wide experience in Paris wishes to hear of a good situation in London.—Pessaud, 55, Ebury Street, Eaton Square, S.W.

ARCHITECT'S JUNIOR ASSISTANT desires re-engagement. Accurate draughtsman and tracer, working drawings, levelling, and surveying. Good references.—H. A., 2, Rosebery Terrace, Crouch End, N.

ARCHITECT'S JUNIOR ASSISTANT requires an engagement in the Midlands.—Apply Box 2580, Builders' Journal Office, 9, East Harding Street, Fetter Lane, E.C.

ARCHITECT'S ASSISTANT of 7 years' experience, with good references, desires engagement in good office. Salary 35s.—Architect, 43, Upper Gloucester Place, N.W.

ARCHITECTURAL ASSISTANT desires RE-ENGAGEMENT. Over five years' good and varied experience (three years' articles). Working drawings, details, surveying, &c.—Apply, S. C. A., 56, Great Freeman Street, Nottingham.

ARCHITECTURAL ASSISTANT desires SITUATION. 14 years' all-round experience. Working drawings, details, specifications, also hospital and asylum work. Good references.—C. T., 80, Mordaunt Road, Harlesden, N.W.

ARCHITECTURAL ASSISTANT, with 7 years' experience, desires engagement. Contract and detail drawings, construction and supervision of works. Moderate salary. Good references.—D. A. Forster, Fernlands, Chertsey, Surrey.

AS CLERK OF WORKS. Long varied experience in the trade. Structural Steel Work, Concrete, Brick, and Stone. Used to large works. Good testimonials, &c.—Box 2549, Builders' Journal Office, 9, East Harding Street, Fetter Lane, E.C.

BUILDER'S CLERK (25) desires SITUATION. 9 years' experience. Prime cost, measure up, good draughtsman, quantities, take off small works, assist estimating, adjust accounts, general routine.—Box 2602, Builders' Journal Office, 9, East Harding Street, Fetter Lane, E.C.

BUILDERS' GENERAL FOREMAN seeks Re-engagement. Trade, carpenter and joiner. Abstainer. London or Bristol preferred. Aged 36.—X. Y. Z., 62, Tubbs Road, Willesden Junction, London.

BUILDERS' GENERAL FOREMAN—thoroughly practical—seeks re-engagement. 20 years with West End firm. Trade, decorator. Age 52.—R. M., 25, Water Lane, Brixton Hill, S.W.

CARPENTER and JOINER'S IMPROVER wants JOB, bench or fixing. 5½ years' experience. Aged 21. Good references.—T. Rivers, Greys Road, Henley.

CLERK OF WORKS DISENGAGED.—Just finished large job in London. Aged 46. Abstainer. Thorough knowledge of all branches. Excellent testimonials from architects of repute.—W., 2, Shanklin Villas, Burlington Lane, Chiswick.

CLERK OF WORKS seeks RE-ENGAGEMENT. Just finished large job in London. Thoroughly practical. First-class references. Age 45. Town or country.—Address B. L., 81, High Street, West Norwood.

ENGINE DRIVER requires Berth. Can do all repairs. Has had seven years' workshop experience. Highest references.—C. B., 1, Petley Road, Hammersmith.

GENERAL FOREMAN, thoroughly practical, many years' experience, seeks re-engagement. Town or country. Trade, Carpenter. Aged 50.—D., 93, Abbotts Park Road, Leyton, N.E.

GENERAL FOREMAN, practical, working, seeks job with Builder. Steady and reliable; competent to carry out all classes of work. Trade, carpenter and joiner.—H. Hems, 7, Park Grove, Bromley, Kent.

GOOD MASON wants Job. Abstainer. Good draughtsman. Capable of setting out. References.—Mason, Stone Works, Frinton-on-Sea, Essex.

MACHINIST or SAWYER wants JOB. All round hand. Sharpen saws, make cutters. Understand Gas Engine. Aged 31. Low wages.—A. Basson, c/o Howard, 1, Pancras Street, Tottenham Court Road, W.

MACHINIST (young) wants job. Spindle, own cutters, planing machines, and saw bench, sharp saws. Would go as improver. Town or country. —H. Wynn, 18, Lausanne Road, Peckham, S.E.

PAPERHANGER (Practical), day or piece work, fill up time painting. Town or Country.—W. Peters, 477, Woolwich Road, Charlton, S.E.

PLASTERER wants PIECEWORK. Labour only. Town or country. Good references. —T. S., 92, Seaford Road, Tottenham.

PLUMBER and FITTER wants PIECEWORK. Own plant. Good personal references from architect and builder finishing large job in West End.—Plumber, 114, Clifton Road, Norbiton.

SHOP or GENERAL FOREMAN seeks RE-ENGAGEMENT. Just completed several large shops in West End. Thoroughly practical, energetic, and reliable in all best class work. First-class refs. from best London firms.—G. Walker, No. 10, Sunnyside Road, Ealing.

STAIRS and RAILS.—Re-engagement wanted by a thorough practical Man, by the hour or piecework. Good references.—J. Dyer, 69, Bemerton Street, Copenhagen Street, N.

SURVEYOR'S TEMPORARY ASSISTANT disengaged. Abstracting, billing, making-up accounts, etc. Terms moderate.—W. G. Thompson, 43, Sisters Avenue, Clapham Common, S.W.

TO QUANTITY SURVEYORS, WANTED by JUNIOR ASSISTANT, aged 20, Engagement. Quick draughtsman and writer. Can abstract, bill, &c. Is industrious, punctual, and reliable. Moderate salary required.—Apply J., c/o Builders' Journal Office, 9, East Harding Street, Fetter Lane, E.C.

TRACINGS. First Class Tracer desires further evening work. Reliable. Seven years' experience. Terms, agreeable—moderate.—Write, R. Launcelot Sivyer, 20, Cowley Street, Westminster, S.W.

WORKING FOREMAN BRICKLAYER.—Varied experience. Good references as to workmanship, character, &c. Age 39.—Address, H., 6, Dorset Road, East Ham, Essex.

WORKING GENERAL FOREMAN seeks re-engagement. Thoroughly experienced in all branches; good references; town or country; trade, carpenter and joiner.—Address, J. B., 62, Davenport Road, Catford, S.E.

# Appointments Vacant.

*The charge for Advertisements under this heading is 1s. 6d. per insertion not exceeding four lines, and 6d. per line afterward, prepaid. Three insertions may be had for the price of two. Advertisements must reach the Office not later than 5 o'clock on Monday.*

GUILDFORD RURAL DISTRICT COUNCIL.
SEND AND RIPLEY DRAINAGE.
CLERK OF WORKS WANTED.

The Rural District Council of Guildford are prepared to receive applications from competent persons to undertake the duties of Clerk of the Works in connection with the works of sewerage and sewage disposal for the Village of Ripley in the Parish of Send and Ripley, in accordance with the plans, &c., prepared by Mr. JOHN ANSTEE, the Council s Engineer.

The person to be appointed must have had previous experience in the duties, and the salary to be paid will be after the rate of £3 a week.

A list of duties, with which the person appointed will be required to conform, can be obtained upon application to the Council's Engineer, at the offices of the Council, Commercial Road, Guildford.

Applications, stating age, and enclosing copies of not more than three testimonials of recent date, together with a statement of the drainage works for which the applicant has acted as Clerk of the Works, must reach me at the Council s Offices, not later than 10 o clock a.m., on FRIDAY, the 23rd day of OCTOBER inst.

By Order,
W. S. V. CULLERNE,
Clerk to the Council.

District Council Offices,
Commercial Road, Guildford,
6th October 1903.

ARCHITECT'S ASSISTANT wanted. Good general draughtsman. Specifications. Knowledge of construction. Able to set up perspectives. State salary required.—Apply Baillie Scott, Fenlake Manor, Bedford.

CAPABLE ARCHITECT'S ASSISTANT Required at once. Designs, complete working drawings, and details. Experience in quantities preferred.—Gelder and Kitchen, Hull.

GOOD DRAUGHTSMAN WANTED, with knowledge of Furniture design and interior woodwork. Excellent opening for young Architect with some capital and abilities, in progressive southern watering place.—"Set Square," Builders' Journal Office, 9, East Harding Street, Fetter Lane, E.C.

SEVERAL GOOD BRICKLAYER FOREMEN WANTED at New Barracks, Tidworth, Salisbury Plain.

TO TILEMAKERS.—Wanted, for British East Africa, a Good Tilemaker, with experience in brick and drain-pipe making. Must be in full sympathy with foreign mission work.—Apply, by letter only, with particulars as to age, experience, references, and salary required, to B. E. A., c/o Industrial Missions Aid Society, 17, Paternoster Row, London, E.C.

WOOD CARVER.—WANTED, a good MAN, accustomed to carving church figures and heads.—Apply, with specimens of work, to Gilbert Seale, 22, George Street, Camberwell Road, London.

WORKING FOREMAN BRICKLAYER. Wanted, Smart Man for job in S. London. Must be good manager of men in own trade, and thoroughly practical.—State age, experience, references, and wages to G. P., 8, Chesterton Road, Notting Hill, W.

## THE BUILDERS' JOURNAL.

### PREPAID ADVERTISEMENT FORM.

**4 LINES for 1/6.**

**THREE INSERTIONS for 3/-.**

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |

**After 4 LINES, 6d. per LINE.**

Write your "Want" Advertisement on this form and send it to 9, East Harding Street, E.C., with Postal Order for 3/-.

**NOTE.—5 o'clock p.m. Monday is the latest time for receiving "Want" Advertisements. Office: 9, East Harding Street, Fetter Lane, E.C.**

# BUILDERS' JOURNAL EMPLOYMENT REGISTER.

We trust this new and original feature will still further add to the usefulness of THE BUILDERS' JOURNAL. It brings together Employer and Employed, to their mutual advantage, thus supplying a long recognised need.

**The Employer.**—In the building trades there must necessarily be "mobility of labour," and when a rush of work comes an employer suddenly finds himself in urgent need of employees. Our scheme is designed to assist him in this respect.

**The Employee** cannot afford to regularly advertise. After the week in which his advertisement appears it is lost for ever. By our new scheme we sustain these advertisements for six weeks.

For 3/- we will give three insertions of any advertisement (four lines) in our "Appointments Wanted" column (*see* page xiv), and also six insertions in the "**Employment Register**" without extra charge.

## THUS FOR 3/- WE WILL ADVERTISE YOU FOR SIX WEEKS.

**Instructions.**—The Employment Register will be classified in trades. All advertisers must furnish their names and full addresses, which will not be published, but a number will be assigned to each for identification. All communications will be treated in the strictest confidence. Employers should address letters to the numbers, and their letters will be immediately forwarded to the advertisers.

The following abbreviations are employed in the Register :—s., salary required ; ex., experience ; refs., references ; yrs., years.

### ACCOUNTANT.

1.—Accountant, wide ex., will open & keep builders' books.

### ARCHITECTS' ASSISTANTS.

2.—Junior Assistant, good refs., accurate draughtsman, levelling. surveying.

3.—Junior Assistant, student R.I.B.A.

5.—Architectural Assistant. 5 yrs. ex. (3 yrs. articles). Working drawings, details, surveying, &c.

6.—Architectural Assistant. 14 yrs. ex. Good refs. Working drawings, details, specifications. Hospital and asylum work.

25.—Junior Assistant. Engagement wanted in Midlands.

26.—Assistant. 6 yrs. ex. Good refs. s. 35s.

43.—Architect's and Surveyor's Assistant. Age 23. Knowledge of all branches. Good refs. Moderate s. North of Eng. preferred.

### CARPENTERS & JOINERS.

9.—Stair & Rail Hand, good refs., hour or piecework.

10.—Carpenter & Joiner, age 31, 14 yrs. ex., excellent refs., moderate s., abstainer, seeks working managership.

### CLERKS OF WORKS.

12.—Clerk of Works, long varied ex., good refs. Structural steelwork, concrete, brick or stone.

13.—Clerk of Works. Age 45. First-class refs. Thoroughly practical. Just finished large job in London.

37.—Clerk of Works. 46. Abstainer. Excellent refs.

### DESIGNERS, TRACINGS, &c.

18.—Experienced Surveyor. Quantities, working and detail drawings. Specifications prepared. Terms arranged.

28.—Tracer. 7 yrs. ex. Moderate s. Desires evening work.

47.—Architect's Draughtsman in good situation in France, wants situation in London, wide ex., excellent refs.

### ENGINE DRIVER.

19.—Driver. 7 yrs. workshop ex., highest refs.

### FOREMEN.

20.—Working General Foreman. Thoroughly ex., good refs., carpenter and joiner by trade.

21.—General Foreman. Age 32, undeniable refs., good manager.

22.—General Foreman. Age 47, thoroughly ex., refs., carpenter by trade.

27.—General Foreman. Age 50. Many yrs. ex. Thoroughly practical. Trade carpenter. Town or country.

35.—Working Foreman Bricklayer. Age 39. Good refs.

36.—Builder's General Foreman. 36. Abstainer. Trade, carpenter & joiner.

45.—Shop or General Foreman. First class refs.

*(Continued on next page.)*

**BLUE and**
**FERRO-GALLIC PRINTS**
White line on blue ground, and dark line on white ground.
**W. F. STANLEY & Co., Limited,**
13, Railway Approach, London Bridge, S.E.
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FORTHCOMING WORKS,
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## Tenders (*cont. from* p. xiii).

**London.**—For the enlargement and improvement at the Salter's Hill School, West Norwood, for the London School Board. Mr. T. J. Bailey, architect, Board's Offices, Embankment, E.C.:—

| | | | |
|---|---|---|---|
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| Holliday & Greenwood, Ltd. | 13,605 | 0 | 0 |
| J. Appleby & Sons | 13.500 | 0 | 0 |
| F. & H. F. Higgs | 13,162 | 0 | 0 |
| Stimpson & Co. | 13,460 | 0 | 0 |
| Treasure & Son | 13,370 | 0 | 0 |
| J. & M. Patrick | 13,328 | 0 | 0 |
| J. Garrett & Son | 13.326 | 12 | 3 |
| Martin, Wells & Co., Ltd. | 13,294 | 0 | 0 |
| W. J. Mitchell & Son | 13,286 | 0 | 0 |
| W. Downs | 13,186 | 0 | 0 |
| J. & C. Bowyer | 12 993 | 0 | 0 |
| G. E. Wallis & Sons* | 12,988 | 0 | 0 |

* Recommended for acceptance.

**Macclesfield.**—For the erection of three shops, Bollington, for the Equitable Provident Society, Ltd. Messrs. Whitaker & Bradburne, architects, 19, King Edward Street, Macclesfield. Quantities by Mr. F. Hewitt, Manchester:—

| | | | |
|---|---|---|---|
| Roylance & Co., Ltd. | £1,820 | 0 | 0 |
| J. Clayton | 1.635 | 0 | 0 |
| W. T. Beard | 1 600 | 0 | 0 |
| Gorton & Wilson | 1,590 | 0 | 0 |
| Berry & Sons,* Macclesfield | 1 578 | 17 | 7 |
| J. Dakin | 1,566 | 0 | 0 |
| Clayton Brothers | 1,450 | 0 | 0 |

* Accepted.

**Oakengates (Salop).**—For the construction of sewers and sewage-disposal works at Oakengates, for the Oakengates Urban District Council. Mr. R. E. W. Berrington, M.I.C.E., engineer, Bank Buildings, Wolverhampton, and 28, Victoria Street, Westminster, S.W.:—

| | |
|---|---|
| E. H. Page, Cardiff | £11,992 |
| A. Braithwaite & Co., Leeds | 9,802 |
| W. H. Reading, Wolverhampton | 8,800 |
| J. Owen, Wolverhampton | 8,599 |
| H. Holloway,* Wolverhampton | 7,897 |

* Accepted.

**Reigate.**—For the erection of a residence at Cronks Hill, Reigate, for Mr. R. W. Neale. Mr. C. E. Salmon, architect, Bell Street, Reigate:—

| | |
|---|---|
| J. Knight | £2,217 |
| T. Nightingale | 1,359 |
| Nightingale & Sons | 1,350 |
| Elsey & Sons | 1,293 |
| W. Wickman | 1,290 |
| J. Waycott* | 1,150 |

* Accepted.

**Scarborough.**—For the various works required in alterations and additions to the stables, sanitary department, Trafalgar Street West, Scarborough, for the Town Council:—

| | | | |
|---|---|---|---|
| C. Flinton | £350 | 0 | 0 |
| J. Jaram & Sons | 340 | 10 | 0 |
| Dinsley & Ware | 337 | 16 | 0 |
| A. Moore | 333 | 0 | 0 |
| G. Colley | 332 | 0 | 0 |
| J. Basteman & Sons | 328 | 0 | 0 |
| J. Barry & Son | 324 | 0 | 0 |
| J. W. Bland | 319 | 10 | 0 |
| A. G. Wellburn | 311 | 17 | 4 |
| Hunter & Smith,* 28, Belle Vue Street | 308 | 10 | 3 |

* Accepted.

[All of Scarborough.]

**Stockport.**—For the manual and team labour and materials required in excavating, sewering, forming, paving, kerbing and flagging the following streets within the borough, for the Highways and Sewers Committee, namely, Harvey Street and Apsley Street. Mr. John Atkinson, A.M.I.C.E., borough surveyor:—

| | | | |
|---|---|---|---|
| Gosling & Stafford, Hazel Grove | £1,266 | 5 | 2 |
| W. H. Eva, Cheadle Heath | 1.235 | 8 | 6 |
| P. D. Hayes,* Old Road, Stockport | 1,225 | 16 | 9 |

* Accepted.

**Talgarth (Wales).**—For the construction of sewerage and sewage-disposal works at Talgarth, for the Hay Rural District Council. Mr. R. E. W. Berrington, M.I.C.E., engineer:—

| | | | |
|---|---|---|---|
| E. Powell, Cardiff | £6,852 | 0 | 0 |
| E. H. Page, Cardiff | 5.949 | 14 | 2 |
| J. E. Evans, Cardiff | 5,898 | 3 | 5 |
| Johnson Brothers, Hereford | 5,710 | 0 | 0 |
| W. H. Reading, Wolverhampton | 5,453 | 0 | 0 |
| A. Braithwaite & Co., Leeds | 5 271 | 11 | 0 |
| G. Holloway, Wolverhampton | 5.147 | 0 | 0 |
| J. H. Macdonald, Blaina | 5,051 | 9 | 8 |

[Engineer's estimate, £5,397.]

**Talgarth (Wales).**—For the construction of water-supply works at Talgarth, for the Hay Rural District Council. Mr. R. E. W. Berrington, M.I.C.E., engineer:—

| | | | |
|---|---|---|---|
| J. E. Evans, Cardiff | £7,105 | 0 | 0 |
| J. Laing, Carlisle | 4,857 | 0 | 0 |
| Johnson Brothers, Hereford | 4,400 | 0 | 0 |
| A. Braithwaite & Co., Leeds | 4,100 | 0 | 0 |
| E. Powell, Cardiff | 4,095 | 2 | 8 |
| P. Edwards, Dodleston, Chester | 3,970 | 0 | 0 |
| G. Holloway, Wolverhampton | 3,767 | 0 | 0 |
| W. H. Reading, Wolverhampton | 3 600 | 0 | 0 |
| J. H. Macdonald, Blaina | 3,430 | 0 | 0 |

[Engineer's estimate, £4.170.]

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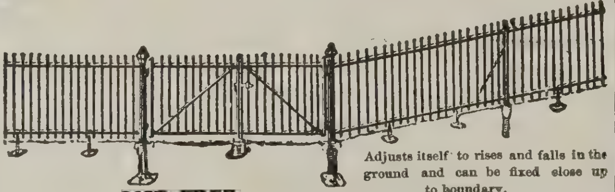

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# THE
# BUILDERS' JOURNAL
## AND ARCHITECTURAL RECORD.

October 21, 1903. Vol. 18, No. 454 9, East Harding Street, E.C.

## Summary.

In an article on foundations, Prof. Henry Adams points out, among other matters, that a greater height in brickwork means a greater settlement above the foundation level, owing to the additional number of bed joints; also that when sand underlies the foundation the chief precaution is to avoid drainage operations in the neighbourhood, especially if the site is a wet one. The London "tubes" have caused trouble through the removal of subsoil water and the probable carrying away of the sand originally contained in the soil. (Page 156.)

Mr. Thomas Winder, in his presidential address to the Sheffield Society of Architects and Surveyors, said the burning question of the day was the provision of artizans' dwellings. He believed that if corporations, like railway and waterworks contractors, would erect iron houses, they might in twenty or thirty years remove them and erect others on sites which would then be more suitable, making a profit out of the improved value of the old sites. He severely criticized the new Sheffield by-laws. (Page 166.)

The R.I.B.A. have voted £500 to the A.A. New Premises Fund.

The standard size of brick as agreed upon by the R.I.B.A., the Brick Makers' Association and the Institution of Civil Engineers has been ordered to come into force on May 1st next, and is recommended to be inserted in specifications. Eight stretchers are to measure 72in., eight headers 35in., and eight bricks alternately, frog to frog and back to back 21½in. Exact details were given on page 277 of THE BUILDERS' JOURNAL for June 24th last.

The new Gresham's School at Holt, in Norfolk (Mr. H. Chatfeild Clarke, architect), is a good example of modern school planning. The buildings are in two blocks, one the master's house and the other the school proper; the former has forty separate studies on the ground floor and the same number of "open cubicles" in dormitories above, 800 cub. ft. of breathing space per boy being allowed in the latter. In each classroom there is 483ft. super. for the accommodation of twenty-four boys, which allows 20 sq. ft. per boy. (Pages 157-9 and centre plates.)

With regard to the thickness of plate glass to resist wind-pressure and vibration from street traffic, recently answered in our columns, it is suggested that the following formula, which is adopted by engineers for loaded flat metal plates, be used :—

$$f = \frac{1}{2}\frac{l^4}{l^4 + b^4}\,\frac{b^2}{t^2}p. \quad \text{(Page 166.)}$$

There is a great opportunity just now for British building firms to secure the market for house fittings in South Africa, more especially in Johannesburg and Pretoria. Corrugated iron is in special demand. The returns for the past two or three months show that houses have been planned for Johannesburg of an average total value of about £159,000 every fortnight. (Page 160.)

**The Mistri.** SEVERAL months ago a five-storeyed building in Bombay collapsed, and five people were killed. Mr. John Begg, Government architect (and a former contributor to our columns), attributed the collapse to the breaking of a beam on the third floor; the beam had a knot in it. What a mistri is, we are not quite sure; he seems to be a kind of native clerk of works; but it is evident that he is not regarded as an altogether reliable person, for in this case the jury expressed the opinion that the Indian Government should take steps to ensure timber and other supports being of the proper strength, and that large buildings should be erected under the supervision of persons "more competent than ordinary experienced mistris." The necessity for such supervision seems very evident from the report which we have before us of Bombay houses that collapsed during May, June and July last. In all there were seventeen, these including buildings of 1, 2, 3, 4, 5 and 6 storeys, two-storeyed "chawls" and a buffalo stable. Most of them fell down because the timbers were too small or were rotten, while the rest collapsed from "old age," though not one of them was built more than fifty years ago. And it is amusing to note under the heading "Whether or not action taken by the municipality" that nothing was done in four cases, while for the rest "a notice was served for the removal of the remaining ruinous portions." Everything indeed seems to begin and end with a mistri. What a glorious opportunity for the district surveyor!

**"Dumping" Bricks.** THE remark of the man who was asked how he could afford to sell his goods at less than cost price, "Ah! it's the quantity that pays," embodies a very subtle fallacy, which might seem to be repeated by a brick manufacturer who explains how he can afford to "dump" his bricks. A few years ago, finding that bricks were very expensive, he opened a brickyard for his estate, and erected plant that was perhaps rather larger than necessary. He found that about 60,000 bricks a week were required in the neighbourhood, and these he made at an inclusive cost of about 22s. a 1,000, selling them at a profit of about 1s. a 1,000, or £3 a week. It was pointed out to him by his manager, however, that he could make 40,000 bricks a week more at a cost of only £20, which would bring down the average cost per 1,000 to about 17s. 3d.; and that by sending them outside the neighbourhood he could sell them to a railway company at a price which, after deducting carriage, would give him 17s. at his yard—a clear loss of 3d. a 1,000, or of 10s. a week. "I took his advice, and now sell 60,000 bricks a week at 23s.—a profit of 5s. 9d. a 1,000, or £17 5s. a week; and 40,000 at 17s. a week—a loss of 3d. a 1,000, or 10s. a week. My nett profit is now £16 15s. a week, instead of only £3. There is plenty of margin here to enable me to accept a considerable further loss on the 40,000 bricks, and I shall certainly continue to dump them whenever I can"—which self-evident brick logic we leave our readers to cogitate upon.

**The Strand Widening.** THE suggestions of Mr. Thornycroft, the Further Strand Improvement Committee, the R.I.B.A. and Mr. Riley (the L.C.C. architect) have all been snuffed by the Improvements Committee, who do not think the expense would warrant what they call a doubtful enhancement of the architectural view in the Strand. By this time everyone is familiar with the proposals for cutting off a portion of the "island" between Aldwych and the Strand in order to bring the church of St. Clement Danes centrally into the vista and to secure an architectural line of the Law Courts on the left. Counting the value of the land as let for building purposes, and the alteration of existing vaults, paving, &c., which would be involved in the several proposals, the Improvements Committee state the costs as £360,000 for Mr. Thornycroft's scheme, £249,400 for the Further Strand Improvement Committee's, £74,000 for the R.I.B.A.'s, and £63,000 for Mr. Riley's. The widened Strand at this part is now 100ft., as against the 60ft. average of the old Board of Works, though Northumberland Avenue is 90ft. and the Embankment 100ft. The Council have every reason to be proud of the fact that, wherever possible, they now adopt a width of 70ft. and 80ft. But there was never any grumble about the width of the Strand at the end of Aldwych. The width is splendid. It was the setting back of the building line for the architectural reasons already stated that formed the whole subject of the proposals: yet these are tacked on to the end of the Improvement Committee's report as if they were the merest trifles.

**Lord Balcarres.** THE appointment of Lord Balcarres, M.P., as a Junior Lord of the Treasury should be welcomed by architects of every political shade. He is a son of the Earl of Crawford, and though only thirty-two years of age has distinguished himself in the House of Commons by his interest in art, particularly in architecture. He is one of the honorary secretaries of the Society for the Protection of Ancient Buildings.

# FOUNDATIONS.

By Prof. **HENRY ADAMS**, M.I.C.E., &c.

THERE can be no question that a good foundation is the most essential matter in connection with every building. We have all heard of the wise man who "built his house upon a rock, and the floods came, and the winds blew, and beat upon that house; and it fell not: for it was founded upon a rock." And also of the foolish man, who "built his house upon the sand, and the rain descended, and the floods came, and the winds blew, and beat upon that house; and it fell: and great was the fall of it."

Many, if not the majority, of our noble cathedrals have suffered from insufficient foundations, and in some instances it has been found impossible to complete the original design owing to the same cause. For instance, the magnificent cathedral at Antwerp, one of the finest in the world, has been waiting 430 years for the completion of the south tower, the work upon it having to be suspended when the tower had reached two-thirds of its intended height owing to the insecurity of the foundation. Nearer home, St. Paul's Cathedral in our own metropolis has lately given great cause for anxiety in this respect, although at the time it was built various devices were adopted to protect it against unequal settlement.

Every practical builder knows that a heavy structure must necessarily cause a settlement or compression of the foundations, but so long as this takes place uniformly over the site there is no harm to be feared. It is unequal settlement that causes the liability to disaster. There are two chief causes of inequality, both of which can be guarded against if sufficient care and foresight be exercised. The first is due to the difference in the weight or height of the various parts, and the remedy for this is to spread the foundations in proportion to the load to be carried, so that the intensity of pressure per unit of surface remains constant. In the case of brickwork, however, a greater height means a greater settlement above the foundation level, in consequence of the increased number of bed joints, each of which adds its quota to magnify the total, so that either the work must be built with a straight joint against an adjoining portion, or with very close joints, or in cement. The other cause of inequality of settlement is the unequal supporting power of the soil at different parts of the site. This is a point upon which it is necessary to exercise the soundest judgment.

Information may be obtained from the standard text-books as to the pressure certain soils will safely resist, but when a trench is opened it is not easy to say precisely under which head the soil would come. A knowledge of what is below the bottom of the trench is often of the greatest importance. In one case I was building a dwelling-house and offices upon made ground, and as a precaution was having the trench rammed, when at one part the rammer rebounded rather more than usual. Upon digging further, about two cartloads of old lath-and-plaster partition were discovered just below, quite enough to have caused trouble later if it had not been removed. Sometimes it is known that underneath what appears to be a solid bed of gravel there are 15ft. or 20ft. of silt; in such cases it is very unwise to disturb the gravel, unless the building is of such magnitude that it is imperative to go deeper, when piling may be resorted to, with longitudinal and transverse timbers framed to the heads, upon which the concrete may be bedded. I have adopted an alternative to this in certain cases, namely, the sinking of concrete piers down to the firm substratum.

Another method, adopted in the case of St. Paul's Cathedral, was to sink brick wells and cover them with flagstones. These have the advantage that they are not liable to decay, but timber piling, properly selected and prepared, is practically permanent. London Bridge is supported upon piles, with rubble stone filled in between the heads and covered with thick slabs of York stone. Some thirty years ago the late Sir Charles Fox asserted that there was a large crack due to settlement in the soffit of one of the arches, into which he had thrust his hand, but this crack does not seem to have extended, or the authorities would not be adding the very considerable extra weight they are now doing in widening the superstructure without extending the foundation.

A modern form of base for securing uniformity of settlement is the combination of iron and concrete, using the term iron in its generic sense, which includes steel also. It is generally in the form of what is called a concrete raft, a monolithic mass containing rolled joists or old rails embedded in it in both directions. The expansion and contraction of both materials are virtually the same under changes of temperature, and the metal is protected from rust when in position, so that if properly laid the adhesion between them is permanent. The iron being stronger in tension than the concrete, should be nearer to the surface, which is liable to become convex, but in general it will be more convenient to allow for either case by placing it through the centre of the depth. In America this method is often indispensable; many of the high buildings are placed upon soil that could not be dealt with in any other way, and the "grillage," as it is called, is carefully designed by experts who have the necessary experience to enable them to combine economy with safety.

Although the foolish man built his house upon sand and came to grief, there are cases in which building upon sand cannot be avoided. For instance, lighthouses on a sandy shore, seaside piers, groynes, promenade walls, &c., to mention only the more common examples; but there are circumstances in which sand is brought to the site for the purpose of building upon. This happens sometimes in building upon peat, where sand piles are formed by driving and withdrawing timber piles and filling up the holes with dry sand. When a load is placed upon an ordinary pile it tends to push it downwards, the chief resistance being at the point, and only a small portion being due to the friction of the sides: but in the case of a sand pile a load on the top causes a pressure upon the sides to such an extent that the pressure on the bottom is very small. This may easily be tested by filling a metal funnel with sand, when it will be found that pressure on the top does not cause it to flow any faster through the hole in the bottom. The chief precaution when sand underlies the foundation, especially if it is a wet site, is to avoid drainage operations in the neighbourhood. The tube railways in London have in certain parts caused trouble by the removal of subsoil water, which has probably carried away at the same time some of the sand originally contained in the soil. Clay is very treacherous as a building foundation, because its power for mischief is so often unsuspected. When a suburban dwelling is erected upon a clay soil, with the foundations only a few feet below the surface, the walls are never still. In wet weather the clay absorbs moisture and expands, and in dry weather this evaporates and causes a corresponding shrinkage, but the shrinkage does not take place uniformly. It begins upon the lines of least resistance, forming large cracks, causing a movement of the surface away from the cracks, and carrying with it whatever is built thereon. In this way it is no uncommon sight to see porches, steps and bay windows gradually leaving the main structure, and, like lead creeping down a roof, when once they have started they seldom come back.

A few years ago, at the close of a dry summer, in one of the London suburbs several of the houses had to have one or more of the main walls rebuilt owing to this cause. The worst cases appeared to be in a fairly straight line across a portion of the district, and it was supposed that this was on the course of an underground spring that had become dry. All this can be prevented by suitable building, but, unfortunately, high ground rents and higher taxes prevent the expenditure of the necessary capital in the first instance; and no subsequent repair, although helping to make the fortune of the local jobbing builder, can compensate for the primary omissions.

Vitruvius, the celebrated architect, nearly 2,000 years ago, after describing the various kinds of buildings, wrote as follows: "All these should possess strength, utility and beauty. Strength arises from carrying down the foundations to a good solid bottom, and from making a proper choice of materials without parsimony. Utility arises from a judicious distribution of the parts, so that their purposes be duly answered, and that each have its proper situation. Beauty is produced by the pleasing appearance and good taste of the whole, and by the dimensions of all the parts being duly proportioned to each other." (Gwilt's translation.)

Good work should be the aim of everybody concerned: it pays in the long run; although it is to be feared that the builder is not alone who once said in a confidential moment, "The question is, not whether it is in accordance with the specification, but is it bad enough to be condemned."

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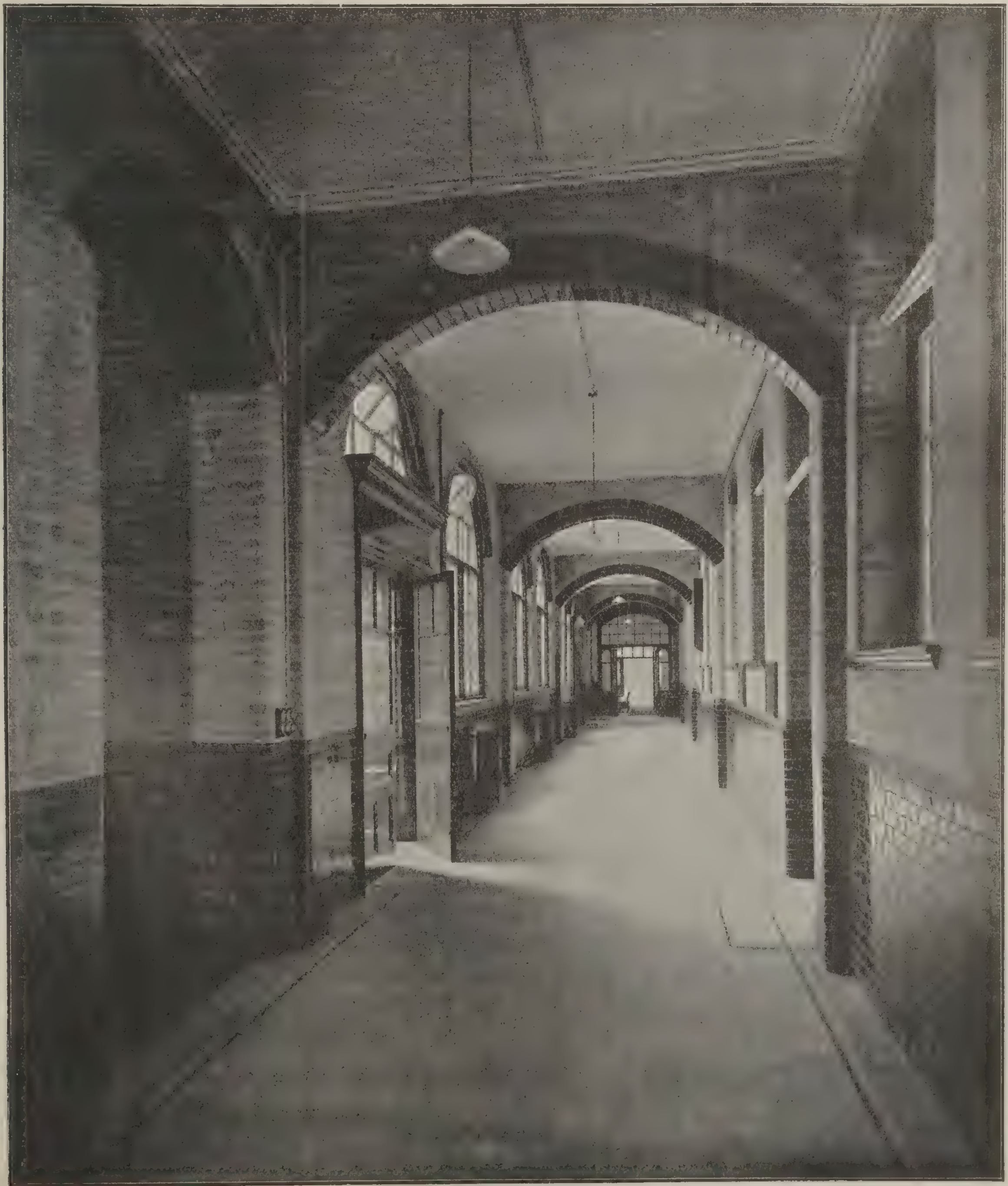
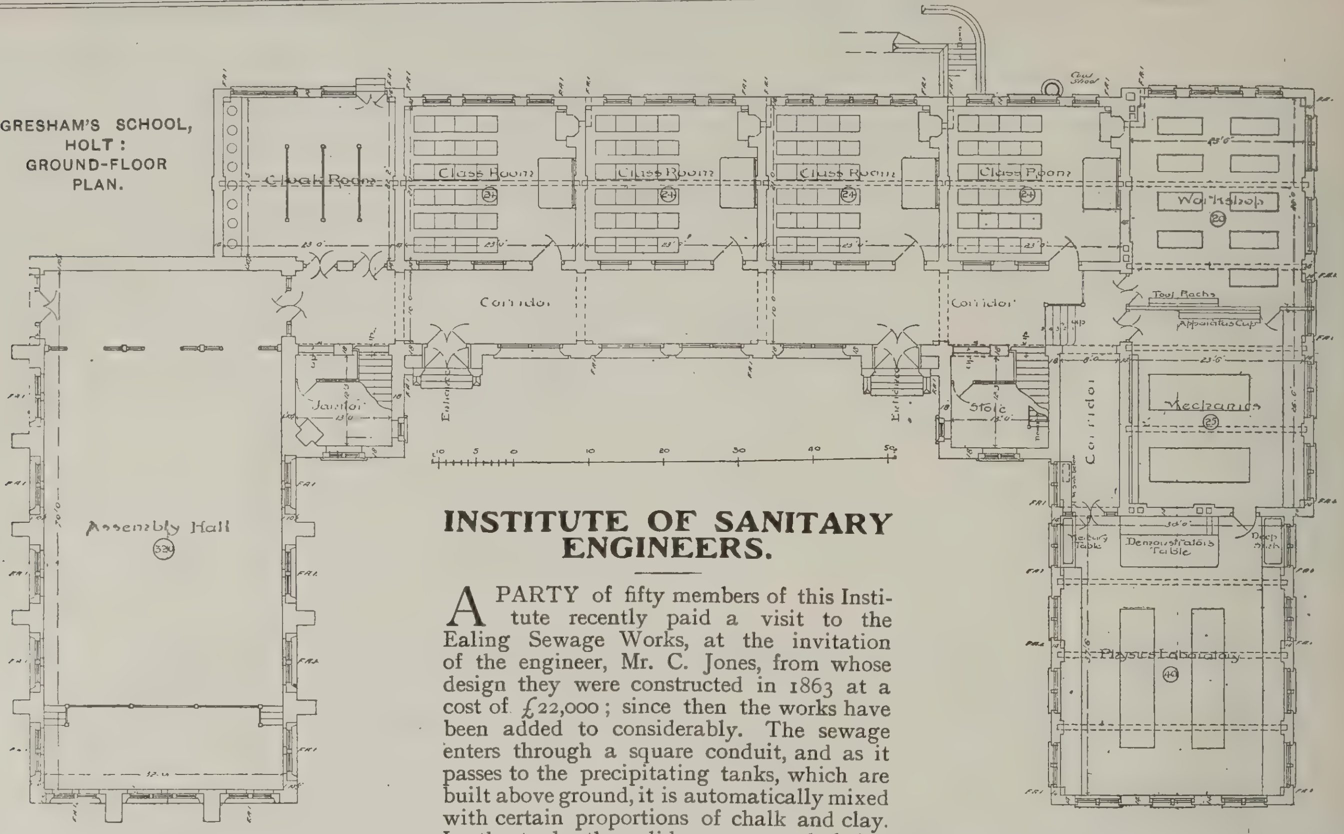
# GRESHAM'S SCHOOL, HOLT.

WE are able to give this week several views and plans of Gresham's School, Holt, Norfolk, the architect of which is Mr. H. Chatfeild Clarke, of 63, Bishopsgate Street Within, London. The new buildings, which were opened about three weeks ago, are about half a mile outside the town, on the Cromer Road, and supersede the old school buildings in the market-place of Holt; these latter were rebuilt about forty-five years ago on the site of the original buildings of the school, which was founded and endowed by Sir John Gresham in 1555–6. The site of the new buildings occupies an elevated position facing due south, being sheltered on the north and east by good belts of trees, and having a gravel and sand subsoil. The buildings are designed in two separate and detached blocks, that on the west containing the head-master's house, dining hall, boys' studies and dormitories, kitchens and offices, and that on the east containing the school buildings, assembly hall, laboratories and workshops. They can be connected by a cloister later, if required. In the centre of the master's house block (see plan on p 158) is placed the boys' dining hall, and on either side are placed the master's private apartments and the boys' studies and dormitories. There are forty separate studies on the ground floor, and on the first floor over these are dormitories for the same number. These dormitories have been planned on the open cubicle system, with enclosed dressing space to each, which gives both a desirable amount of privacy as well as a facility for supervision. The breathing-space in the dormitories is 800 cub. ft. for each boy. Lavatories and bathrooms are placed at the ends. The dining hall is seated for eighty boys, not including the raised portion with a high table, and from this hall a covered cloister leads to the lavatories, locker room and out to the playing fields. Over the dining hall is an isolated sick-room, with bathroom and nurses' rooms adjoining. On the west side of the dining hall, the remainder of the buildings, which are in three storeys, comprise the master's house, communicating on the main-stair landing with a corridor leading to the boys' dormitories by a pass door. In the rear of the ground floor are the kitchen and offices, with servants' rooms over, approached by a separate staircase. To the east of these buildings, but in the same line of frontage, is the school building, in the form of a three-sided quadrangle; the west side containing the school assembly hall, 70ft. by 32ft., with tracery windows and open timber roof of a late Gothic type. From it a wide corridor runs eastwards, with classrooms and cloak-room on the north side, ending in a return wing containing the laboratories, workshops and lecture-rooms. The whole of the building is in two storeys, excepting the hall, the greater height of which balances the remainder. In each classroom there is 483ft. super. for the accommodation of twenty-four boys, allowing more than 20 sq. ft. per boy; the lighting is left-handed in all cases, and all the rooms have additional lighting from the corridors, and also means of cross-ventilation. The rooms are all fitted with double-hung sashes with deep window boards, and all have extract ventilation flues connected to a main exhaust. They are heated with hot-air stoves, with additional heating from low-pressure hot-water pipes. On the second floor a special drawing classroom has been provided. The chemical laboratory has accommodation for twenty-four boys, and is a lofty room with gables in the roof on both sides, so as to ensure a cross-current for ventilation. Adjacent to the laboratory is a preparation room, which also serves the theatre on the north side of it. The physical laboratory contains room for twenty-eight boys; the metal workshop twenty-five boys; and the carpenters' shop twenty boys. All the classrooms, laboratories, lecture-rooms and workshops have been planned and fitted to obtain the best light and most effective supervision, and the heating and ventilation have been especially studied. Electric light is used throughout, supplied from an installation in the school grounds. The buildings are faced with local red bricks and Ancaster stone, the roofs being covered with Broseley tiles. Special attention has been given to the sanitary arrangements, and the drainage is conveyed by gravitation to the town sewers; no tanks or cesspools are used for soil or waste drains. On the south side of the Cromer Road a sanatorium for six boys has been erected. The beds are in two wards, with a bathroom adjoining, while accommodation is given for a nurse and caretaker. The head-master's house has been fitted with fire hydrants on each floor, and, in addition, fixed ropes are provided from the dormitories to give easy access to the ground in case of emergency, in addition to the three stone staircases, all of which are hardly likely ever to be involved in fire at the same time. Mr. George Riches, of Cromer, was the builder, the sub-contractors being:—Plumbing and drainage, Messrs. Matthew Hall & Co.; heating and cooking



GRESHAM'S SCHOOL, HOLT NORFOLK: GROUND-FLOOR CORRIDOR, LOOKING WEST. H. CHATFEILD CLARKE, ARCHITECT.



GRESHAM'S SCHOOL, HOLT: GROUND-FLOOR PLAN.

apparatus, Messrs. F. Edwards & Son; wrought-iron work, Messrs. Starkie Gardner & Co.; electric-light plant and installation designed by Messrs. Massey & Allpress, and mostly executed by Messrs. Wells & Co.; laboratory fittings (from the architect's design), Messrs. Baird & Tatlock; school desks, Messrs. Hawkes, of Norwich, and the Bennett Furnishing Co.

## INSTITUTE OF SANITARY ENGINEERS.

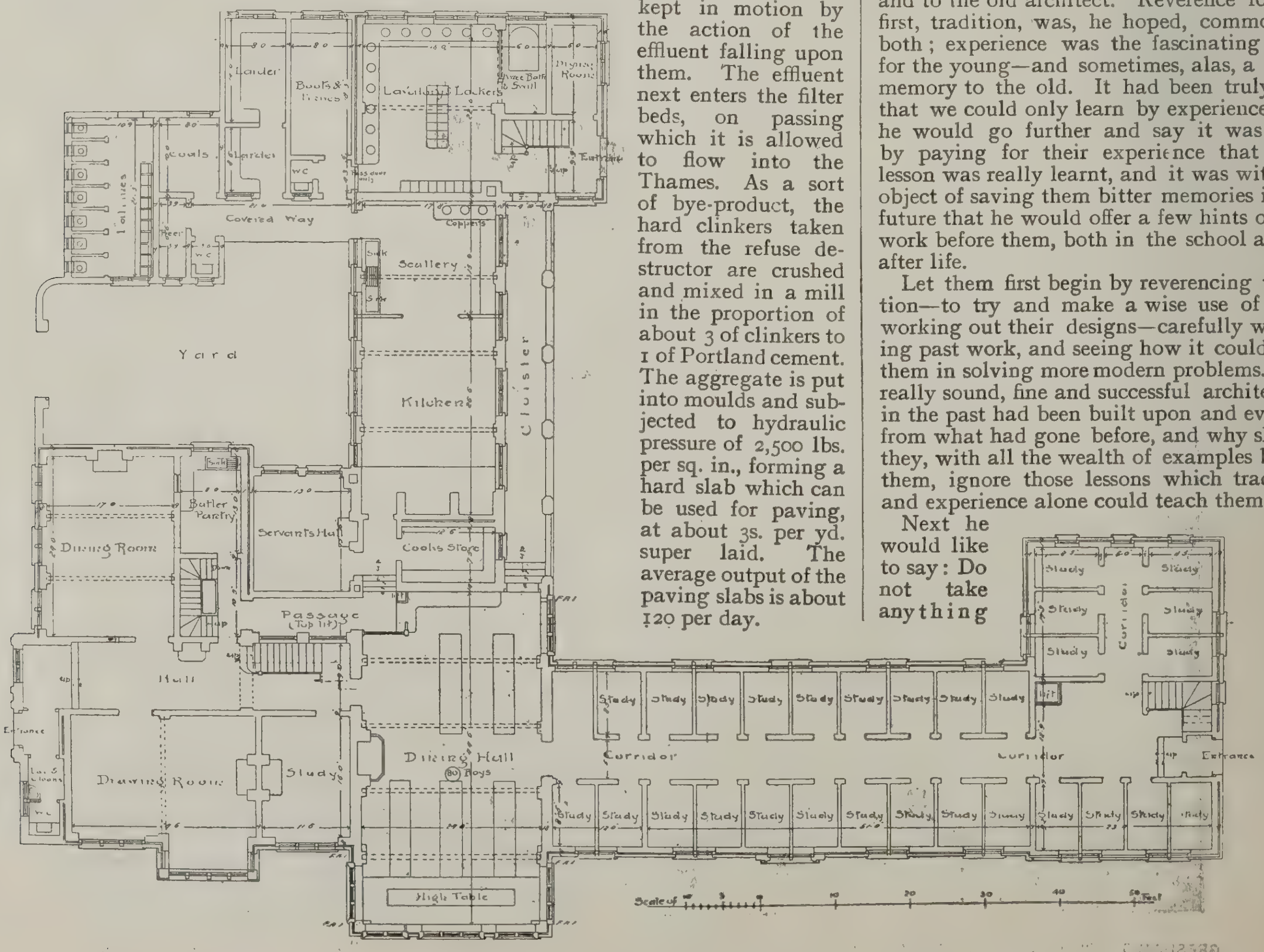
A PARTY of fifty members of this Institute recently paid a visit to the Ealing Sewage Works, at the invitation of the engineer, Mr. C. Jones, from whose design they were constructed in 1863 at a cost of £22,000; since then the works have been added to considerably. The sewage enters through a square conduit, and as it passes to the precipitating tanks, which are built above ground, it is automatically mixed with certain proportions of chalk and clay. In the tanks the solids are arrested, being afterwards conveyed to the sludge room to be pressed into cake by hydraulic power. The sludge is transmitted by means of lifts to the refuse destructor, where it is burnt with the other town refuse. After the removal of the solids the effluent flows over a weir and through a series of tanks. It then reaches Mr. Jones's ingenious oxygenizing device, which consists of aëration wheels, kept in motion by the action of the effluent falling upon them. The effluent next enters the filter beds, on passing which it is allowed to flow into the Thames. As a sort of bye-product, the hard clinkers taken from the refuse destructor are crushed and mixed in a mill in the proportion of about 3 of clinkers to 1 of Portland cement. The aggregate is put into moulds and subjected to hydraulic pressure of 2,500 lbs. per sq. in., forming a hard slab which can be used for paving, at about 3s. per yd. super laid. The average output of the paving slabs is about 120 per day.

## A.A. SCHOOL OF DESIGN.

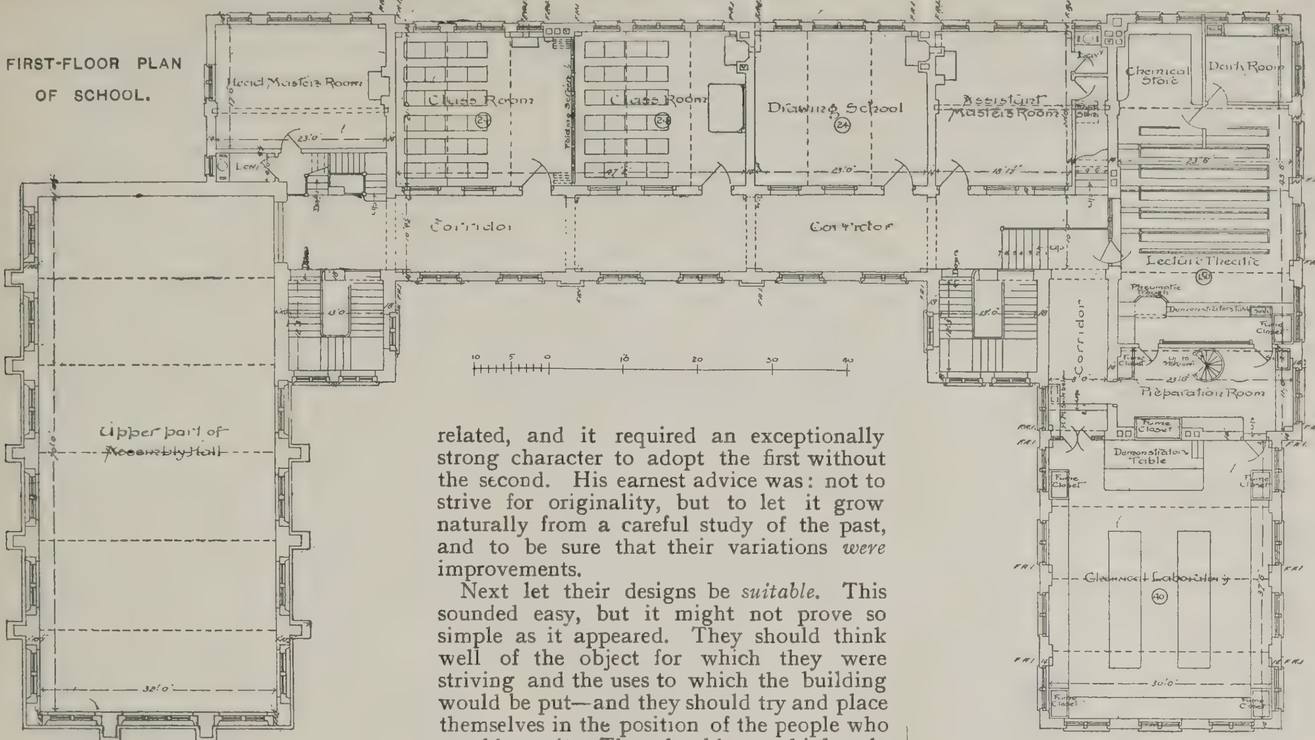
AT the preliminary meeting of the Architectural Association School of Design held at No. 9, Conduit Street, W., on October 13th, addresses were delivered by Mr. Walter Cave and Mr. J. S. Gibson. Mr. Cave said "Tradition" and "Experience" were both very important words to the young and to the old architect. Reverence for the first, tradition, was, he hoped, common to both; experience was the fascinating goal for the young—and sometimes, alas, a bitter memory to the old. It had been truly said that we could only learn by experience, but he would go further and say it was only by paying for their experience that their lesson was really learnt, and it was with the object of saving them bitter memories in the future that he would offer a few hints on the work before them, both in the school and in after life.

Let them first begin by reverencing tradition—to try and make a wise use of it in working out their designs—carefully weighing past work, and seeing how it could help them in solving more modern problems. All really sound, fine and successful architecture in the past had been built upon and evolved from what had gone before, and why should they, with all the wealth of examples before them, ignore those lessons which tradition and experience alone could teach them.

Next he would like to say: Do not take anything



GRESHAM'S SCHOOL, HOLT: GROUND-FLOOR PLAN OF MASTER'S HOUSE. H. CHATFEILD CLARKE, ARCHITECT.



FIRST-FLOOR PLAN OF SCHOOL.

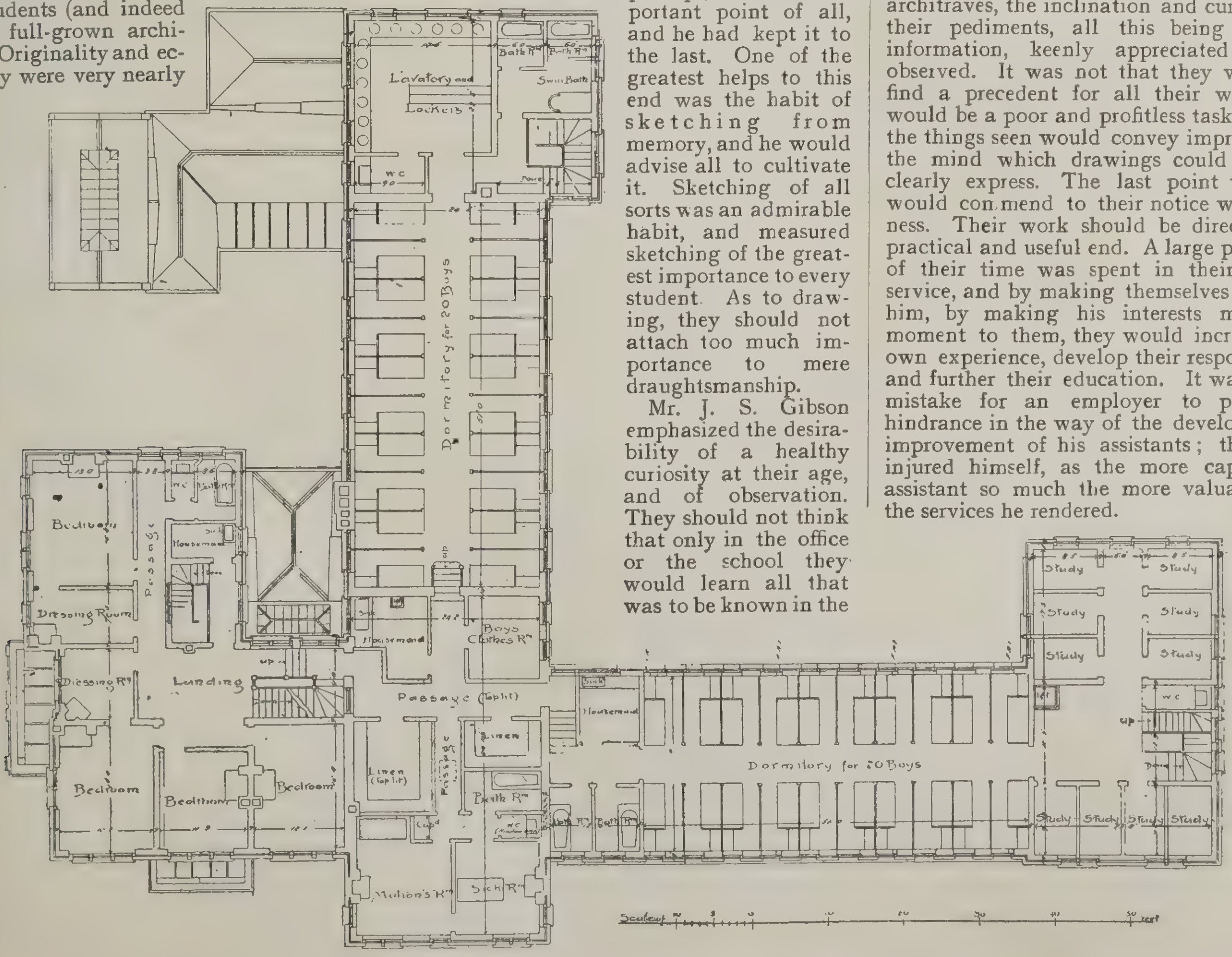
for granted. They would find in every question which they had to answer, and every problem which they had to solve, both there and in their future practice, that at first sight certain arrangements appeared inevitable. These appearances should not be trusted without a very careful search and honest endeavour to prove that these things were inevitable.

He said, avoid eccentricity. It was the besetting sin of many architectural students (and indeed of some full-grown architects). Originality and eccentricity were very nearly related, and it required an exceptionally strong character to adopt the first without the second. His earnest advice was: not to strive for originality, but to let it grow naturally from a careful study of the past, and to be sure that their variations *were* improvements.

Next let their designs be *suitable.* This sounded easy, but it might not prove so simple as it appeared. They should think well of the object for which they were striving and the uses to which the building would be put—and they should try and place themselves in the position of the people who would use it. They should not think only of the exterior elevation, but begin with the plan in all its branches, and design from the interior to the exterior, remembering that however attractive they made the outside it would be judged principally by those who inhabited the inside, and an attractive elevation would not compensate for an ill-arranged plan.

They should let their designs grow in their minds, and not on paper. This was, perhaps, the most important point of all, and he had kept it to the last. One of the greatest helps to this end was the habit of sketching from memory, and he would advise all to cultivate it. Sketching of all sorts was an admirable habit, and measured sketching of the greatest importance to every student. As to drawing, they should not attach too much importance to mere draughtsmanship.

Mr. J. S. Gibson emphasized the desirability of a healthy curiosity at their age, and of observation. They should not think that only in the office or the school they would learn all that was to be known in the matter of design. If their faculties were all alive there, so much the better, but it was also imperative that they should have them fully awake in the street, the shop and wherever else they might be. When they were worried as to the proportions of a door or a window, whether its height should be twice its width, or just a little more or less, then a ride on a 'bus would give them an opportunity to view the proportions of thousands of doors and windows, the widths and projections of their architraves, the inclination and curvature of their pediments, all this being valuable information, keenly appreciated because observed. It was not that they wanted to find a precedent for all their work—that would be a poor and profitless task, but that the things seen would convey impressions to the mind which drawings could never so clearly express. The last point which he would commend to their notice was usefulness. Their work should be directed to a practical and useful end. A large proportion of their time was spent in their master's service, and by making themselves useful to him, by making his interests matters of moment to them, they would increase their own experience, develop their responsibility, and further their education. It was a grave mistake for an employer to place any hindrance in the way of the development or improvement of his assistants; thereby he injured himself, as the more capable the assistant so much the more valuable were the services he rendered.



GRESHAM'S SCHOOL, HOLT: FIRST-FLOOR PLAN OF MASTER'S HOUSE. H. CHATFEILD CLARKE, ARCHITECT.

# BUILDING MATERIALS FOR SOUTH AFRICA.

### The Opportunity for British Firms.

A VERY interesting article on building materials appeared recently in the "South African Mines, Commerce and Industries" (Messrs. Hectorson & Co., of 81, Bishopsgate Street Within, E.C., are the sole agents for Great Britain).

Manufacturers of building materials, says our colonial contemporary, are not failing to read the evidence that is being submitted to the Housing Commission at present sitting in Johannesburg. The commission is, of course, confining its enquiries to Johannesburg, but the same overcrowding exists not only in Pretoria and other centres in the Transvaal, but also in the chief centres in the two Coast Colonies. From the evidence it is apparent that thousands of houses will have to be built in Johannesburg during the next few years.

The process of expansion, indeed, has already begun in earnest. Never in the history of the town have the building trades been so active as they are to-day. The past year has practically seen two or three new suburbs added, and house-building is going on as busily as ever. Reports submitted at the last meeting of the town council showed that the buildings in respect of which plans had been passed during the preceding fortnight were valued at no less than £272,540. This however, it should be stated, was an exceptional fortnight. The return included the Rand Club building, valued at over £100,000. For the past two or three months the return has shown buildings planned of an average value of about £159,000 each fortnight. This is surely a significant enough figure. When it is stated that in Johannesburg alone buildings are being erected to the value of £330,000 per month, and it is known further that building activity is common to practically every important centre in the country, it is not necessary to labour the point that South Africa now presents a good and growing market for building material. Much of the material needed in connection with these operations is imported, and it is a question for the manufacturers of this material as to how much of this growing trade they mean to secure.

### Who will Secure Future Trade?

In some lines home manufacturers of course do not compete. Great quantities of doors, windows and window sashes come from America. In this trade openings occur for Canadian firms. Canadian industrialists have recently had their attention called to this market, and it may be expected that Canada will make a business-like attempt to capture a share of the trade.

Opportunities for English manufacturers will occur principally in house fittings. There is, and will continue to be, a good demand, for instance, for fire-grates and chimney-pieces—these latter in wood, metal and fancy marble selling well. There is likely to be a good demand, too, for white tiles for both flooring and roofing. They cannot of course come into general use, because of the comparatively high cost, but they are likely to be more or less employed in the construction of the more expensive houses and in the clubs and hotels that are being erected in practically all the large towns.

A fair volume of trade may also be looked for in cement. Here the Britisher comes into competition with the German and the Belgian. The best English and the best German cement are about equal in quality, and the f.o.b. price is about the same—say 5s. 3d. per barrel. The Belgian cement is inferior in quality and lower in price.

Sanitary goods are certain to be in great demand owing to the number of sanitation schemes that are about to be carried out in the country. Johannesburg is about to spend £500,000 for drainage purposes, of which it is expected about £100,000 will be needed for pipes.

The article that will be in greatest demand of all, perhaps, is corrugated iron. At present this trade is largely monopolized by two or three firms, both English and American, and it is not difficult to believe that it offers openings for new competitors. Such competitors, however, would need large capital for the manufacture of corrugated iron, which, of course, requires elaborate plant, and as current orders mostly specify one or other of existing well-known makes the newcomer would probably find that the process of establishing a footing in the trade required time.

In other branches of the building material trade there are, no doubt, openings, and, as the Board of Trade Commissioner has recently pointed out, the present is a favourable time for any attempt to enter this trade.

# Law Cases.

**Adding a Porch to a House.**—At the Burnley County Police Court Messrs. J. & G. Duxbury, builders, of Padiham, were summoned recently for building a porch without the consent of the urban district council. Mr. J. C. Waddington, clerk to the council, said that the case was taken under the Public Health (Buildings and Streets) Act, 1888. Messrs. Duxbury had erected a wooden porch which projected beyond the main building line. They seemed to have prepared the porch, and then, thinking they ought to get some permission, submitted a plan. That plan was not the plan of the porch as erected, but a plan of a porch they probably thought the council would approve. The plan showed that the porch would line with the bay window. The porch as erected projected 4¾in. beyond the bay window. For the defence it was stated that after the house had been occupied it was thought that a suitable porch—a harmless thing—would make it more attractive. The Act under which the charge was brought was passed to preserve the regular line of houses in streets, and it was a gross perversion of it to bring such a paltry thing as this into court. Mr. Waddington contended that the porch was an addition. The magistrate said they were not satisfied that it was an addition within the meaning of the Act. The case was dismissed.

**Patent Movable Partitions.**—In an action recently heard before the Comptroller of Patents at the Patent Office, John Wilks, the inventor and patentee of the movable partitions for schools manufactured by the North of England School Furnishing Co., Ltd., of Darlington, opposed the grant of a patent to David W. Clarke and James Clarke, of Dundee, on the ground that it was an infringement of Wilks's patent. The patent referred to appliances for holding the leaves of the partitions upright, when folded to one side of the room, being held by a projection or catch on the leaf engaging a notched or recessed bracket affixed to the ceiling. The case was heard on July 21st last, and the Comptroller then reserved his decision to allow the applicants, if possible, to amend their specification so as to avoid the prior patents. This they were unable to do, and in a lengthy decision just issued the Comptroller has refused to grant any patent to Messrs. Clarke. Mr. Wilks has already stopped the grant of several other patents for similar partitions. Mr. J. Owden O'Brien, successor to W. P. Thompson & Co., of Manchester, chartered patent agent, conducted the opposition for Mr. Wilks, and Mr. Douglas, of Dundee, appeared for Messrs. Clarke.

# BIRMINGHAM ARCHITECTURAL ASSOCIATION.

IN the annual report of the Birmingham Architectural Association extended reference is made to architects' registration. It will be remembered that the matter was dealt with by the president of the R.I.B.A. in a conference with the presidents of the allied societies held in London last June, when, notwithstanding that the majority of the presidents reported in favour of the principle of registration, and expressed a hope that the R.I.B.A. would take the matter up, it was obvious, apart from the merits or demerits of the question, that there were so many eminent architects, besides nearly the whole of the council, opposed to registration, that the chances of a Bill becoming law were very remote. "In face of such strong opposition," continues the report of the Birmingham Association, "the matter, at present at least, may be considered as not within the scope of practical politics."

### Prime-Cost Clause in Conditions.

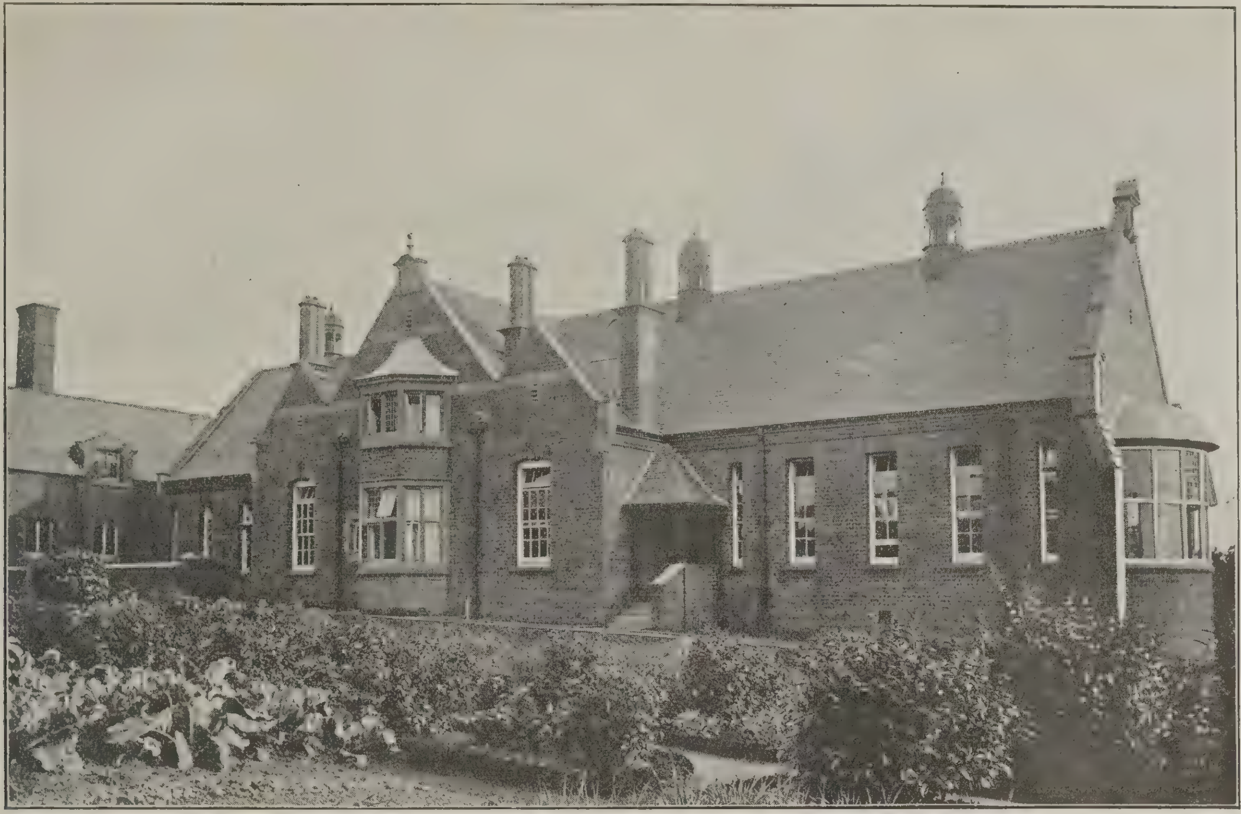
A conference was held with the Birmingham Builders' Association at which were discussed the subjects of prime-cost items and items of "cutting-away-for and making good after other trades," as at present dealt with in bills of quantities. It was suggested by the builders' association that in future prime-cost items should be made to include 10 per cent. profit for the builder, and that the work in cutting-away-for and making good after other trades should, as far as possible, be measured or detailed; or, failing this method, a provisional sum should be included and the work charged for in a day-work account. The council of the Birmingham Architectural Association acceded to the latter suggestion, but decided that prime-cost amounts should in all cases be nett, and that builders should add their profit. In reference to this subject the following timely note has since been issued by the R.I.B.A. Practice Standing Committee, which is the only logical standpoint that can be set up:—

"The attention of the Council has been drawn to a not uncommon practice in certain parts of the country for architects to disregard the prime-cost clause (No. 27) in the Institute form of contract, and to allow builders the large and varying discounts to which merchants' prices are frequently subject, to the detriment of clients' interests. It having been the policy of the Institute to clear the ground between architect and client of every possibility of doubt as to open dealing on the part of the builder, the Council cannot but deprecate this laxity, and they urge architects to enforce rigidly the prime-cost clause for the sake both of uniformity of practice in the profession and the maintenance of the important principle the clause involves."

An Advisory Committee of the Birmingham Architectural Association has been formed, consisting of the president (Mr. Arthur Harrison) and Messrs. W. Hale, W. Henman, J. C. Nicol, F. B. Osborn and T. Cooper (hon. secretary), to consider and advise the council on matters such as professional practice and questions raised by the master-builders' association.

# SKETCHES OF DETAILS.

NEXT Saturday week, October 31st, is the last day for receiving sketches of details on modern buildings for which we offer four guineas—two guineas for the best pen-and-ink sketch and two guineas for the best sketch in wash. Particulars of the competition will be found on p. 126 of the issue for September 30th or on p. 106 of the issue for September 23rd.



NEW WORKHOUSE INFIRMARY, PATRINGTON, HULL. RUNTON AND BARRY, A.R.I.B.A., ARCHITECTS.

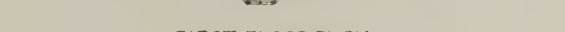
## PATRINGTON INFIRMARY.

THIS is a small infirmary containing only eighteen beds, and might therefore be described as a cottage hospital. It follows the usual arrangement of a centre and two wings. The former contains the day-rooms, nurses'-room, special wards for two beds each and a bathroom. The bathroom is so placed that it can be used by either men or women; and it projects southwards 5ft. or 6ft., thus separating the men's verandah from the women's. Each day-room is lighted by two windows and a dormer. The nurses' duty-room occupies the centre of the north elevation, and has the male special ward on one side and the female on the other, both being commanded from the nurses' room by observation windows. There are two entrances, one for each sex, on the north side. The whole of this section has been carefully thought out, and must be pronounced successful except, says the "Hospital," that the special wards present the old difficulty of inadequate cross-ventilation. "These rooms each contain 168ft. super. of floor-space, that is 84ft. per bed, which is hardly enough for any special case, or indeed for many ordinary cases, as with 12ft. ceilings the space would work out at 1,008 cub. ft. per bed." The male dormitory contains eight beds, and each bed is properly provided with a window on both sides. In addition there is a fine circular window at the west end. The female dormitory is for six beds, and the arrangements are similar. The lavatory and closet blocks are well cut off from the main block by cross-ventilating passages: and they are so arranged that they can be approached from either the day-room or the dormitory.

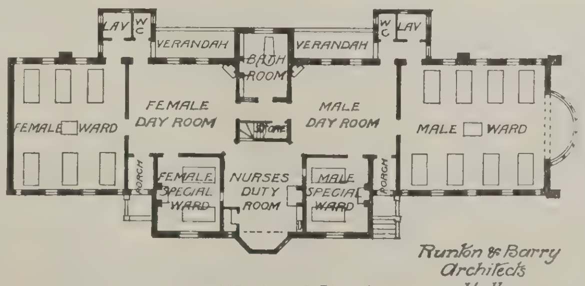
The building is raised about 5ft. 6in. above ground at the western end. It is carried out in red stock bricks with Howley Park stone dressings, the roof being covered with Wolliscroft's brindled tiles. The floors are of maple. Twyford's sanitary fittings are used and Musgrave's stoves. The architects were Messrs. Runton & Barry, of Hull. Mr. Sergeant was the contractor. The cost was something over £2,000, which is about £112 per bed, a sum by no means extravagant nowadays; but it must be remembered that the infirmary is merely an adjunct to an existing institution, and hence requires no administrative sections. We are indebted to the "Hospital" for the plans below.

**Frosterley Marble.**—In Weardale, one of the remoter parts of Durham, a wide layer of undoubted Frosterley marble has been found bedded and buried in the limestone rock, quite 10ft. below the surface.

WORKHOUSE INFIRMARY
PATRINGTON UNION.



FIRST FLOOR PLAN·



GROUND FLOOR PLAN.

# Views and Reviews.

### Cities of To-Day.

What struck us most with the author's former book on this subject, "The Improvement of Towns and Cities," was the comparative way in which he dealt with certain features in the chief cities of the world. In this second book of his the same characteristics are present, but there is not sufficient useful matter to fill 375 pages. The book seems spun out. Condensed to one-half its size, with much of the comment on civic ethics omitted, and, especially, with illustrations introduced, it would have been a very acceptable addition to the literature on the subject.

It is evident that Mr. Robinson has travelled a good deal and kept his eyes open, with the result, already mentioned, that he is able to compare the merits of various treatments. For example, in dealing with the water approach to cities, he refers to New York with its hundred miles of water front, teaching what should not, rather than what should, be done; the raised promenade of Antwerp or, better still, of Algiers; the constructive orderliness of Hamburg; the simple quays of Florence and Pisa or the brick walls of Amsterdam's placid canals; Budapest with its long promenades and broad walled-gardens; Nice with its sea front; Munich with its Quaistrasse; Rome with its vigorous bridges and new development of the river course; the quays of Paris and, still more successful, our own Victoria Embankment. It is the comparative knowledge of all these which fits a man to direct a new scheme for a great city.

The author devotes a chapter to the land approach, and in doing so expresses himself at once a modern. The new, permanent and formal entrances to the town are its railway stations. These are not to be thought of as highly-advanced inns, the waiting-rooms and platforms made secondary and incidental to an hotel (as in this country) or to an office building (as in America), but essentially as great portals. The North and East stations of Paris, the station at Hamburg with turrets flanking its castellated main pavilion, and that of Genoa with its enclosing arms, are held to be on the right lines, as contrasted with the way-station conception, like that at Cologne or at 125th Street, New York. Besides which, there must be some spacious square adjoining, which, while giving a dignified aspect to the station, will be found useful for massing troups or other bodies of men leaving or arriving at the city. The arriving traveller is not, as in New York, to pass with gratitude out of one tunnel only to gaze into another yawning cavern.

Mr. Robinson claims that the Government buildings should form an administrative centre, not given merely a central location, which will be invited by considerations of convenience even more strongly than by those of sentiment, but all the additional emphasis and conspicuousness that site can offer. The Capitol at Washington suggests itself as a familiar example. Of its position Mr. Frederic Harrison has said: "Londoners can imagine the effect if their St. Paul's stood in an open park, reaching from the Temple to Finsbury Circus, and the great creation of Wren were dazzling white marble, and soared into an atmosphere of sunny light."

We have not the space to go into the many aspects of civic art with which the author deals; it must suffice to say, in conclusion, that they concern the street planning of the business and residential districts, the formation of great avenues, the introduction of fountains and sculpture, open spaces, parks and temporary decorations.

"Modern Civic Art." by Charles Mulford Robinson. New York and London: G. P. Putnam's Sons, price 1·25 dols (say 5s).

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### Arithmetic of Chemistry and Physics.

This book may serve its purpose, *i.e.*, a book of exercises and examples of the most elementary calculations for the veriest beginners in experimental science—a book for the kind of instruction given at Board schools, but we doubt the policy of such methods of instruction, which are not practical, but merely ordinary school-teachers' methods in the cram examination system. We believe in allowing the student to employ his common-sense, in allowing him to develop originality, instead of grinding him into one fixed groove detrimental to his brain's free play. Instruction in science to an elementary student should deal with the everyday facts with which he is familiar out of school hours, and so awaken his interest and understanding; he should not be supplied with copious exercises such as these for his soul's torment, but instructed in general terms as a beginning, and allowed to experiment and find things out for himself. Then, after a time, when his knowledge has developed in ordinary mathematics and general scientific knowledge, he may be more readily and quickly instructed in physical and chemical mathematics, going much more into detail with a view to practical use. If a youth's early work is confined to other useful subjects which are at the same time mind-training, at a later period, with ripened experience, he will be able to assimilate facts more quickly, and no time need be lost in repetition; nor will his brain be overloaded

"The Arithmetic of Elementary Physics and Chemistry," by Harold Munkman Timpany, M.Sc. London: Blackie & Son, Ltd, 50, Old Bailey, E.C., price 1s. 6d.

## MODERN LONDON BUILDINGS.

(*Continued from* p. 136, *No.* 452.)

*The following lists have already been published:—E.C. district: Public and semi-public buildings, March 25th; domestic and religious buildings, colleges and schools, April 1st; business premises, April 15th, April 29th and May 13th; hotels, restaurants, &c., May 13th. E. district: Public and semi-public buildings, June 3rd and August 5th; religious buildings, colleges and schools, July 8th; business premises, domestic buildings, hotels, restaurants and public-houses, August 5th. S.E. district: Public and semi-public buildings, August 5th and 19th; religious buildings, August 19th; business premises and domestic buildings, September 2nd; colleges and schools, and hotels, &c., September 16th. N. district: Public and semi-public buildings, October 7th.*

### N. DISTRICT: RELIGIOUS BUILDINGS.

| BUILDING. | ARCHITECT. | APPROXIMATE COST. | REMARKS. |
|---|---|---|---|
| **1875.** | | £ | |
| St. Joseph's Retreat, Highgate. | F. W. Tasker | — | The building is in white brickwork and stone, and was erected for the Passionist Fathers. |
| St. Mary's Church, Brookfield, Highgate. | William Butterfield. | — | |
| **1876.** | | | |
| All Saints' Church, Aden Grove, Stoke Newington. | F. T. Dolman & W. T. Allen. | 7,050 | The church is in the Early English style It is faced with yellow stocks, and has dressings of Bath stone. The piers to the nave are cased with Box Ground Bath stone. The plan consists of a nave 83ft. 8in. by 35ft, a chancel 36ft. by 35ft., aisles 10ft. 6½in. wide, and a narthex at the west end. The foundations are carried to a depth of 25ft. in some parts. |
| Baptist Chapel, Finsbury Road, Wood Green. | Banister Fletcher. | | |
| German Lutheran Church, Dalston. | Habershon & Brock | 10,000 | The church is constructed of brick in the old Germanic style of Gothic architecture. The principal entrance is in Alma Road. The church will accommodate 300 worshippers. It has a wooden roof, and the nave measures internally 79ft. 6in. by 28ft. 3in. The transepts are 49ft. in length from the end of one to the end of the other, and the height of the spire is 136ft. 3in. to the top of the metal cross. |
| Highgate Road Baptist Chapel and Schools, Gordon House Lane, Highgate. | Satchell & Edwards. | 6,000 | The church is in the Early Decorated style. It is 70ft high, 102ft. long and 55ft. wide. The facings are of Kentish Rag and Bath stone. |
| St. Faith's Church, Stoke Newington. | W. Burges | — | The church has internal buttresses, in order to save space, and is constructed of brickwork. The triforium is 10ft. above floor level, and the roof is barrel-boarded. The style of the building is thirteenth-century French Gothic, and the nave will hold 600 persons. |
| St. George's Church, Tufnell Park. | George Truefitt | 2,625 | The tower is 20ft. square, the height to the top of the spire being 120ft. |
| Union Chapel, Compton Terrace, Islington. | James Cubitt, acting architect; Alfred Waterhouse, consulting architect. | 30,000 | The chapel will hold 1,650 persons, and the schools are for 900 children. |
| **1877.** | | | |
| St. James's Presbyterian Church, Southgate Road, Wood Green, Hornsey. | Thomas Arnold | 5,500 (including site). | The church will accommodate 400 worshippers, without galleries. |
| **1879.** | | | |
| Baptist Chapel, Dale Grove, North Finchley. | Morton M. Glover | 4,000 | The walls are of Kentish Rag stone with Bath stone dressings. Seating accommodation is for 400 persons. |
| Raleigh Memorial Congregational Church, corner of Milton and Albion Roads, Stoke Newington. | John Sulman | 6,000 | In the basement is a lecture hall to seat 600 adults and 600 children, and there is also an infants' room for 100 children. The church, with galleries, will seat 1,000 people. |
| **1881.** | | | |
| Holy Trinity Church, Crouch Hill, Hornsey. | Edmund B. Ferrey | 7,000 | The church has a nave of six bays 165ft. long by 30ft. wide, with aisles 5ft. 6in wide, and a chancel 32ft. long by 31ft. wide, with a south aisle Doulting stone is used for the external dressings, and Corsham Down stone for those inside. The piers to the nave arcade are of Forest of Dean stone. The church will seat about 700 persons. |
| Wesleyan Chapel, Holly Park, Crouch Hill. | E Hoole | — | Accommodation for about 650 persons. |
| **1882.** | | | |
| Congregational Church, Highbury Quadrant. | John Sulman | 12,900 | The church will accommodate 1,200 and the lecture hall 650 The school is an irregular octagon, and is faced internally with cream gaults, with Bath stone dressings, the exterior being of red Suffolk brickwork. |
| **1883.** | | | |
| St. Faith's Mission Hall, Stoke Newington. | J. Martin Brooks | — | The hall is 63ft. by 33ft. It is faced with yellow stock bricks, and has dressings of Bath stone. |
| **1884.** | | | |
| Independent Church, Lower Edmonton | Borer & Dobbs | 7,060 | The church is 92ft. by 48ft., and will accommodate 1,000 persons. The exterior is in Kentish Rag, with Bath stone dressings. The spire is 142ft. high. The style of the building is Geometrical Gothic. |
| Parish Room for Christ Church, Highbury. | J. Douglass Mathews. | 1,400 | The hall seats 300 persons. It has a classroom, scullery, &c, in the rear. |

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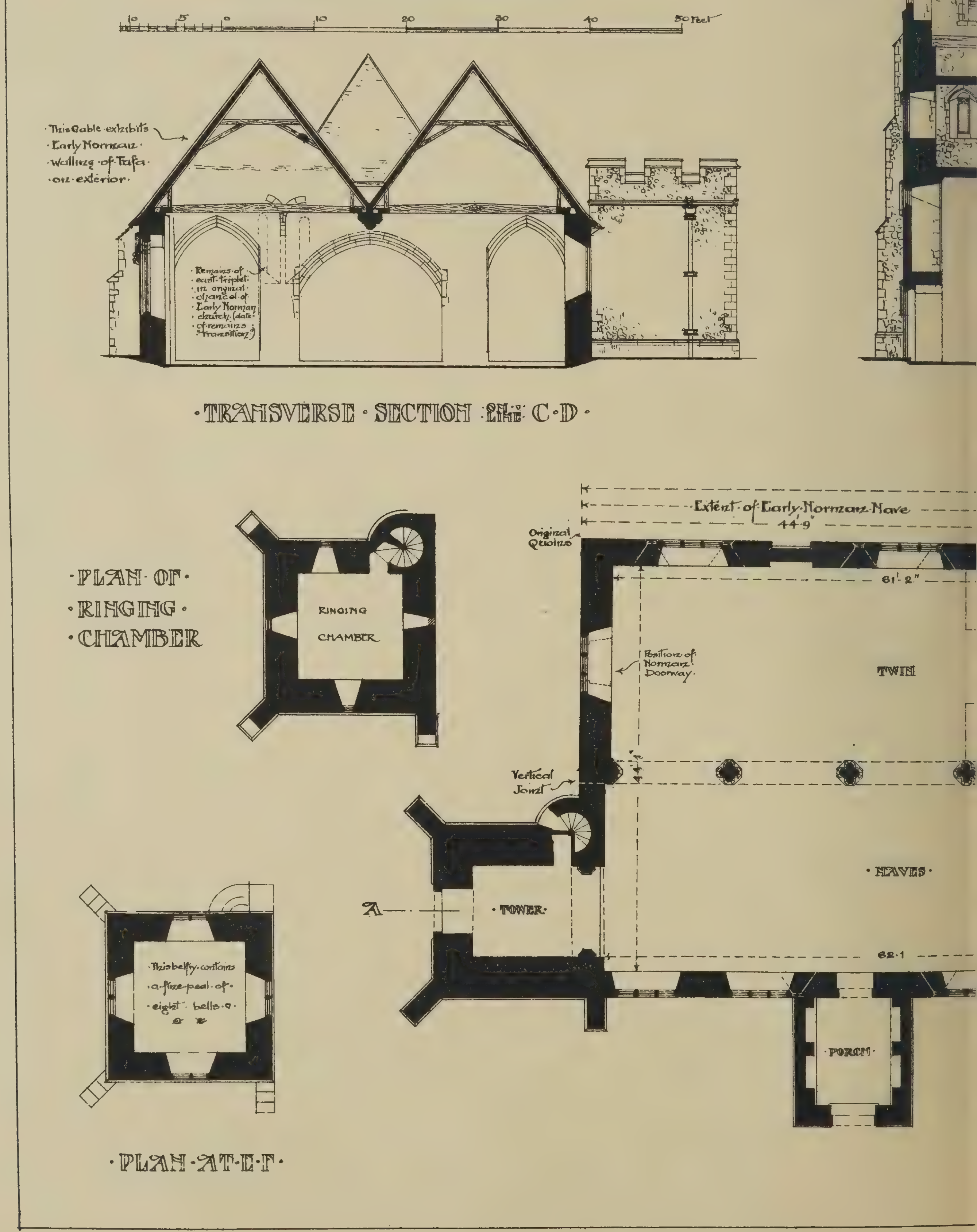
*Supplement to*
THE BUILDERS' JOURNAL AND ARCHITECTURAL RECORD,
*Wednesday, October 21st,* 1903.

# ·SAINT· PAVLINVS·
# ·CRAYFORD·KENT·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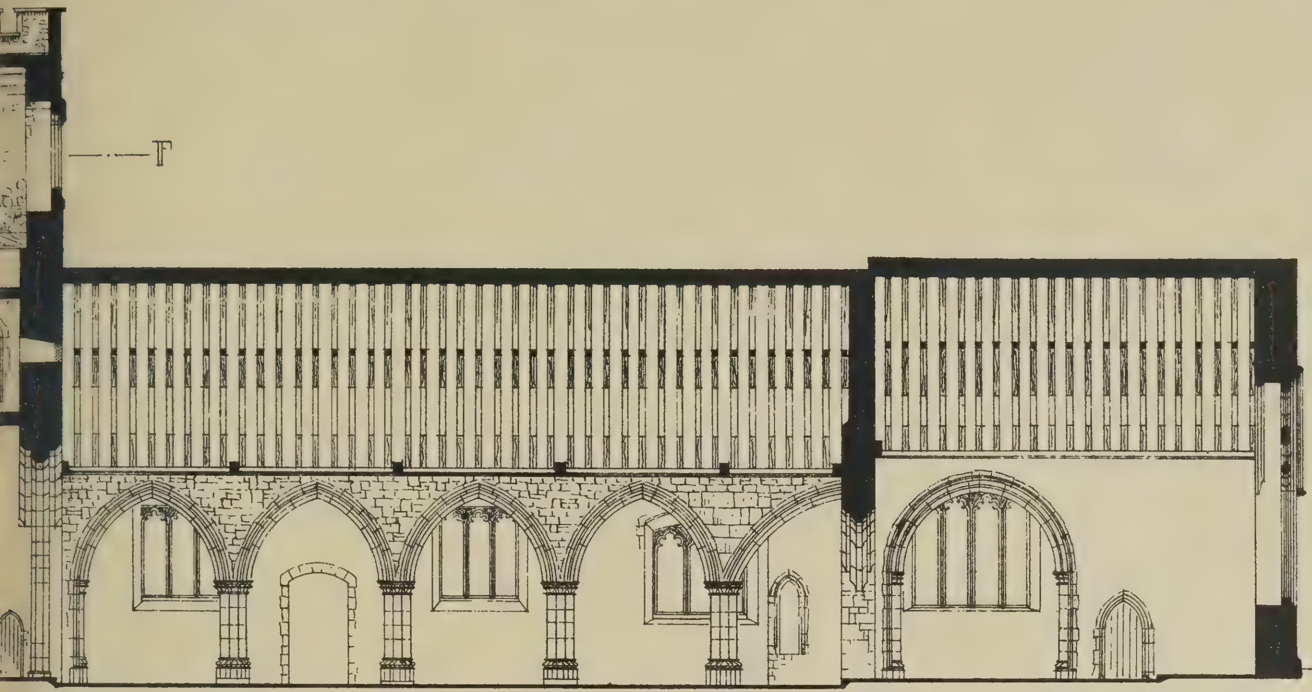

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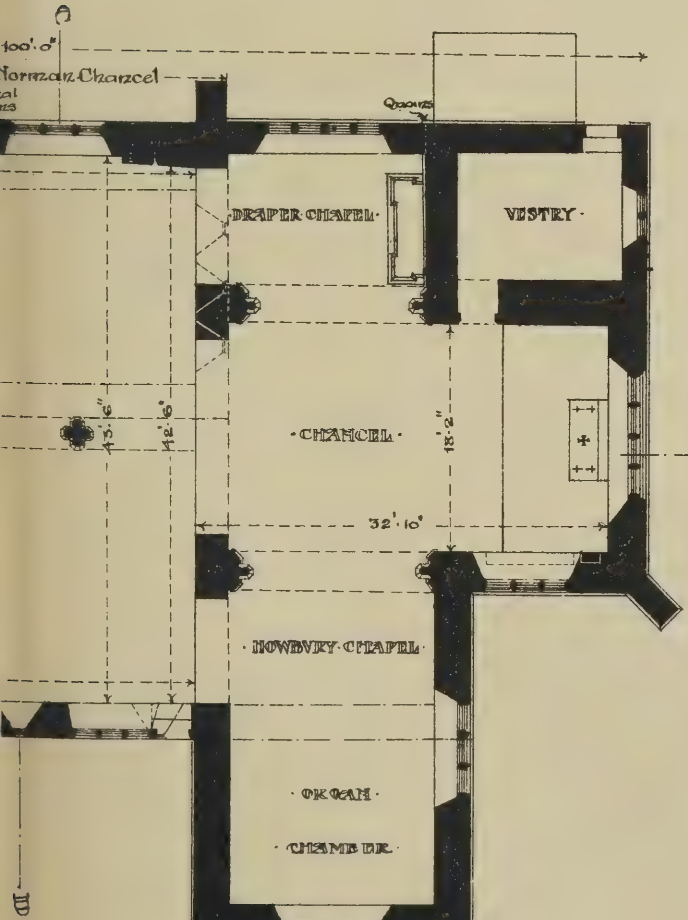

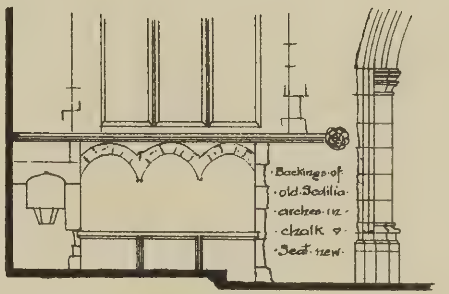

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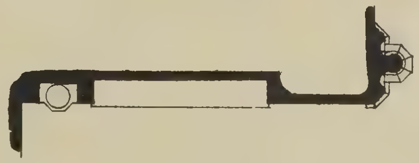

·PLAN·

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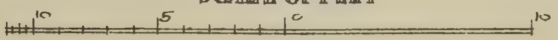

MEASVRED·&·DRAWN·
·BY·W·BRAXTON-SINCLAIR·1903·

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## N. DISTRICT: RELIGIOUS BUILDINGS—*cont.*

| BUILDING. | ARCHITECT. | APPROXIMATE COST. | REMARKS. |
|---|---|---|---|
| **1884** —*cont.* | | £ | |
| St. Emanuel's Church, Hornsey Road, Holloway. | F. R. Farrow & E. Swinfin Harris | 5,242 | Accommodation is provided for 1,000 persons. There are nave, chancel and aisles. The style is First Pointed, and is carried out almost entirely in red brick. |
| St. Michael and All Angels' Church, Stoke Newington Common | J. E. K. Cutts | 5,242 | The accommodation is for 750. Red-brick facings, arches and quoins; interior stuccoed. |
| **1885.** | | | |
| All Saints' Church, Upper Holloway. | J E. K. Cutts | 4,975 | There are 708 sittings, and the church consists of nave, choir and aisles. |
| **1886.** | | | |
| Presbyterian Church, corner of Hornsey Lane and Cromwell Avenue. | Potts. Sulman & Hennings. | 6,700 | The exterior is of Kentish Rag stone, the style being Decorated Gothic. There are a hall and vestries at the back, The church will hold 730 persons. |
| **1837.** | | | |
| Cemetery Chapel (Church of England), Edmonton. | Ricketts, Surveyor to the Local Board. | — | The chapel is in fifteenth-century Gothic style, the walls being of brick faced with Kentish Rag stone, with Monk's Park stone dressings. |
| **1889.** | | | |
| Parish Church of St. Mary Hornsey. | James Brooks | 15,000 | The walls are built in stone, the facing being Ancaster. Accommodation is provided for 1,260 persons. The style of architecture adopted is Perpendicular Gothic. The nave and chancel are 200ft. in length, and are continued the same width and height throughout. The aisles are 20ft. wide, the transepts 20ft. by 27ft., and the main building is 50ft. high to the ridge. |
| Islington Chapel, Upper Street, Islington. | Paull & Bonella | — | The chapel is 50ft. wide by 66ft. long, exclusive of choir gallery, and has accommodation for 1,000 persons. It is divided into nave and aisles by iron columns. Underneath the chapel is a schoolroom 50ft. wide by 56ft. long and 16ft. high. The style is Domestic English of the seventeenth century. |
| St. Joseph's R.C. Church, Highgate Hill. | Albert Vicars | — | Accommodation for 1,000 persons. The total internal length of the church is 146ft., and the width, including aisle, 55ft. The panelled ceiling of elaborate design is 53ft. from the floor. The tower over the baptistery is 108ft. high. The tower, cupola and dome are copper-covered. |
| St. Mark's Church, Noel Park. | Rowland Plumbe | 7,000 | The accommodation provided is for 850 persons, the nave being 88ft. by 27ft. and 30ft. high to the plate. The aisles are 12ft. 6in. wide, and the morning chapel is 30ft. by 15ft. The facings are of red brick, Harmer Hill stone being used in piers, &c. |
| **1891.** | | | |
| St. Paul's Church, Harringay | G. M. Lilley | — | The style is thirteenth-century Gothic. Nave arcade and clearstory and lean-to aisles are built of red Bracknell bricks with Bath stone dressings. The roofs of red fir covered with grey slabs. The nave is 98ft. by 30ft., the total width with aisles being 62ft. and the height to ridge 65ft The chancel is 32ft. long. |
| **1892.** | | | |
| Methodist Chapel, Willoughby and Hampton Roads, Hornsey. | Robert Curwen | 6,000 | The chapel measures 58ft. 8in. by 51ft. 3in. There are also vestries, infants' classroom, chapel-keeper's house. |
| Parish Institute, West Green, Tottenham. | G. H. Fellowes Prynne. | — | The parish hall, which is 80ft. by 34ft., has a platform at the south end, with ladies' and gentlemen's dressing-rooms on either side. The hall ceiling is entirely matchboarded for acoustic reasons. The walls are of brick. The room accommodates about 850 persons. |
| St. Stephen's Church Schools. Canonbury (additions). | Arthur Ardron | — | The work is of simple character, the walls being of stock bricks, with stained and varnished joinery. |
| **1893.** | | | |
| Corbin Memorial Hall Crouch End, Hornsey. | Alfred Conder | 4,762 | This building was erected for Sunday school purposes. The principal schoolroom or lecture hall on the first floor is 59ft. by 42ft. There are two classrooms near the platform, which serve as dressing-rooms for entertainment purposes. An adjoining house is utilized for classrooms and caretaker's residence. The front of the building is of Kentish Rag stone, used in combination with Ancaster and Bath stone. |
| **1896.** | | | |
| Church of the Ark of the Covenant, Rookwood Road, Stamford Hill. | Joseph Morris & Son. | 14,000 | The building is a parallelogram on plan. 60ft. long by 36ft. wide It has an apse at the east end and a tower and spire at the west end. Seating accommodation is provided for 400 persons, and underneath the eastern portion are a classroom and vestry. The walls are of brick, faced externally with Bristol stone and Portland stone dressings. |
| Church of St. Peter the Apostle, Lower Edmonton. | Newman & Newman. | 4,080 | This portion of the building consists of the four western bays of the nave and aisle in red and yellow brick, with stone dressings. Accommodation is provided for 500 persons. |
| **1897.** | | | |
| St. Peter's Church, Wightman Road, Hornsey. | James Brooks & Son. | 10,000 | The building is of stock brickwork and Ancaster stone. The nave and chancel roof are covered with green slates, and the remainder of the roofs in lead. The accommodation is for 950 worshippers. |
| **1898.** | | | |
| Baptist Church, Ferne Park, Hornsey. | George Baines | 8,643 | The general plan of the church is a Greek cross, with wood vaulted ceiling, carried up to a higher section in the central crossing. The crossing is divided from the four arms by a four-centred Gothic arch and a moulded stone arch. Accommodation is provided for 656 sittings on the ground floor and 464 in the galleries. |
| Methodist Extension. Middle Lane Wesleyan Church, Hornsey. | W. H. Boney | 4,500 | The extension comprises a church-parlour, five classrooms, infants' school and a lecture hall, as well as an additional 300 sittings in the church. |
| Mission Hall for St. John's Church, Cleveland Road, Islington. | Burmeister | 2,900 | The hall will accommodate 300 persons, and in the basement there is a gymnasium for boys and girls, two classrooms and a kitchen. |
| St. James's Presbyterian Church. High Street. Wood Green (extension). | Arnold | 2,000 | The extension consists of a new aisle and gallery, providing further seating room for 160 persons. |
| St. Luke's Church, Clay Hill. Enfield. | James Brooks & Son | 8,000 | The church consists of a nave, chancel and Lady Chapel on the north of chancel, and another chapel on the south side out of which the vestries lead. The two eastern bays of the nave, on the north and south sides form transepts, the south projecting farther than the north to give space for the organ. The bricks used for both internal and external facings are Bracknell bricks. Bath stone is sparingly used for the piers, arches and windows. The roofs are covered with Broseley tiles. A flèche containing the sanctus bell is placed at the junction of nave and transepts. |
| **1899.** | | | |
| Nonconformist Chapel, Islington Cemetery. | Forsyth & Maule | 3,054 | |
| Wesleyan Methodist Church, Muswell Hill. | J. Gunton | — | The plan consists of a nave, aisles and large transept. The accommodation is for 4[illegible]0 persons. |
| **1900.** | | | |
| Church of St. Peter, South Tottenham. | J. S. Alder | 8,000 | The building has red brick walls, Weldon stone window and door dressings, bands, &c., and red Dumfries stone arcade pillars; the roofs are of pitch-pine, covered with tiles. The floors are laid with wood blocks under the seats, and with marble mosaic in the chancel and porches. The church consists of nave 85ft. by 28ft, and aisles 11ft. 6in.; chancel 40ft. by 24ft., with a morning chapel 37ft. by 15ft. on south side; organ-chamber and vestries on north side; and baptistery and narthex at west end. The accommodation provided is for 800 persons, the seats being of Canadian oak. The west end has a bell turret and a large traceried window above the baptistery roof |
| **1901.** | | | |
| Mission Church of All Saints', Pentonville. | R. A. Briggs | 4,500 | The church measures 38ft. by 45ft., and seating accommodation is provided for 250 persons. There is a gymnasium 15ft. high beneath the church. |
| St. Michael's Church and Vicarage, Edmonton. | W. D. Caröe | 12,000 | Sittings are provided for a congregation of 730. |
| **1902.** | | | |
| Claremont Hall, Pentonville. | Barnes, Williams, Ford & Griffin. | 8,000 | This building, which was formerly Old Claremont Chapel, has been considerably altered and added to, in order to serve the purpose of a Congregational mission hall. |
| Jesuit Church, Stamford Hill. | Benedict Williamson. | — | This church is being built in the Gothic style. It comprises nave, aisles, transepts and sanctuary. The total length is 177ft. and the width 62ft. The sanctuary is 46ft. deep, and is 3ft. 6in. above the floor of the nave. The height of the building to the nave ridge is 66ft. and 54ft. to the vault. |
| Mission Room (at rear of 91 and 91, White Lion Street), Pentonville. | R. A. Briggs | — | The walls are faced externally with red bricks, the dressings being of Bath stone. |
| Presbyterian Church, Muswell Hill. | George Baines & R. P. Baines. | — | Externally the building will be faced with whole white flints, the dressings being of Costessey work. A square towe surmounted by a spirelet forms a prominent feature at the angle of the building. |
| R.C. Church for the Austin Canons, corner of the Womersley and Dashwood Rds., Stroud Green | Canon Scoles | 5,400 | In 1896 the south aisle of this church was erected, providing accommodation for 150 persons. The other aisle and nave were afterwards commenced, and opened in 1902. The nave consists of five bays, the columns and arches being of stone, with double lancet windows to clearstory. The ceiling is panelled, with wooden ribs, and the general style is Gothic. The sanctuary is not yet built. The church will now accommodate 500 worshippers |
| St. James's Church, Muswell Hill. | J. S. Alder | 13,000 | Outside and inside dressings, arcades, windows, &c. are of Bath stone. The walls faced with Ancaster Rag stone. The completed church consists of nave 96ft. by 30ft. internally, aisles 13ft. wide, chancel 40ft. by 28ft, morning chapel 40ft. by 15ft. 3in., organ transept, and spacious vestries and porches. There is also a tower with spire at the north-east angle of the building, rising to a total height of 180 feet. The roofs are of open-timbered construction in pitch-pine, the height to ridge being 66ft., and to vault 54ft The total accommodation is for 950 persons. |
| St. Luke's Church, Mayfield Road, Hornsey. | J. E. K. & J. P. Cutts | — | The part at present in course of erection consists of the nave and aisle, with vestries underneath. Seating accommodation will be provided for 750 persons. |

*(To be continued.)*

## ELECTRICAL NOTES.

THE last century has aptly been termed the century of steam, and there is some justification for the statement which has been made, that the present one will be known as the century of electricity. Whichever way we turn we find duties which were once performed by animal or by human power, and then by steam, being carried on now by electricity; and not only these, but many new ones, for which electricity is alone applicable, are introducing new industries, new habits and fresh environments.

### Motors.

The utilization of electrical power for industrial and private purposes is making rapid headway in this country. Originally delayed through many causes which it is not necessary to enter into here, the competition of other countries in labour-saving devices and workshop economies has forced electrical driving into prominence; so that whilst a few years ago there was hardly a maker here who had a list of standardized motors, the establishment of works in this country from the States and the Continent has rapidly changed matters. At the present moment motors may perhaps be said to be a glut on the market; everyone standardizes them from very small sizes up to 50-h.p. and more; and so well has their construction been studied that their efficiency has been raised to a point far above that of the steam or any other engine. As a result, finality may be said to have been reached with motors as they are at present made, and prices are very much cut. Here, then, is the opportunity for the buyer; but how few have appreciated the amount of work to be done with motors, or the savings to be effected by their use.

### Some Applications.

Owing to the limitations of the town house, motor applications can be very little utilized. Nevertheless, the humble electric fan is significant by its absence, though it will be found in most houses of any consequence abroad. Amongst other uses for the ordinary house, there is the dinner lift, the sewing-machine, knife and boot polishing, and several others, which are conspicuous by their rarity. It is not necessary to have a separate motor for all of these, as arrangements can be made to drive off a small countershaft extending through two or three basement rooms. The country house lends itself to even more applications, for, in addition to the above, motors can be used for driving agricultural and dairy machinery, for opening lodge gates, chaff-cutting and so on. When we come to public institutions, electric goods and passenger lifts are required, ventilating fans, pumps and special contrivances of many sorts. Each industry can and does utilize electrical power for its own special machinery, but perhaps the builder does so the least. Apart from the driving of saws and other machinery in the workshop, it is surprising what little use has been made of the electric motor on building operations.

### The Motor for Building.

Beginning from quite small things, the contractor who is running up small property in towns could with advantage and economy make use of a motor instead of a steam-engine for mixers and grinders. The electric supply mains are seldom far away, the motor is more portable, and it is not necessary to bring coal on to the site. Going then to larger building operations, where a crane is used as well, an electric motor would just be taking current when it was working, whereas a steam engine is always burning coal. Further, in the case of large buildings where many cranes, mills and saws are in use, it would pay to have a portable steam-engine and dynamo, the latter supplying current for the various motors. Such an arrangement would dispense with a quantity of inefficient steam-engines, all requiring coal; the coal would all be burned at one central point, and, in fact, the contractor would have a small power distribution system.

### The Question of Economy.

That motors run off electric-supply mains are a cheaper source of power than steam or other engines, goes almost without saying. In the one case the energy is produced in bulk, and with the greatest possible efficiency. In the other it is produced in small quantities by small engines which are inefficient, and which have to burn fuel continously whether they are doing work or not. Apart from that, the cost of maintenance, the depreciation, insurance premiums, and many other factors, all tell in favour of the electric motor as a source of driving-power. The actual cost of current per horse-power cannot be laid down definitely, as it depends on the work and the locality; but, as an average, the supply authorities would charge something between 1d. and 2d. per h.p. In the case of a small transmission system such as mentioned above, the cost of a horse-power at the pulley would probably be somewhat less. A. M. I. E. E.

## Keystones.

**The Bill for rebuilding Lambeth Bridge** will not be presented to Parliament this year.

**The "Underground."**—The platforms of the stations on the electrified Metropolitan and District Railways are to be of cement

**Trees in London Streets.**—The Metropolitan Public Gardens Association have offered to plant trees in Bedford Row and part of the northern end of Lamb's Conduit Street, on condition that the Holborn Borough Council undertakes their maintenance.

**Change of Address.**—Mr. Edwin J. Sadgrove, M.S.A., architect and surveyor, has removed from No. 22, Surrey Street, to Church House, 4, Southampton Row, W.C. His telephone number, 2366 Central, and telegraphic address, "Tenon, London," remain unaltered.

**Archæological Discoveries in Greece.**—Several important archæological discoveries have been made recently. A large and very perfect statue of the best period has been found at Samos, where excavations are still going on at the famous temple of Hera, under the auspices of M. Kavadias.

**L'Auto Patin** is no other than our motor-skate as spoken of in Antwerp by the "Matin" The idea of "Le Journal des Constructeurs" (ourselves again) is held to be pleasant, if not seemingly practical just now: "mais tout arrive . . . . et l'homme électromobile, dans cette forme ou une autre, est peut-être bien, en effet, l'homme de l'avenir."

**Preserving a Village.**—The British Aluminium Co. at Foyers, in Inverness-shire, expresses its willingness to give control of the buildings and development of the village adjoining their works to a syndicate having similar interests to those of the Garden City Association (347-351, Birkbeck Bank Chambers, Holborn, W.C.), from whom other particulars can be obtained. Architects are invited to compete in designing plans.

**The Liverpool Pierhead Baths**, which are to be carried out from the designs of Mr. A. Saxon Snell, F.R.I.B.A., at a cost of £75,000, will include three swimming baths, respectively 150ft. by 50ft., 75ft. by 40ft., and 60ft. by 30ft. (for ladies); 125 private slipper, spray and hydropathic baths; two suites of Turkish baths, one for 56 gentlemen and the other for 18 ladies; and two suites of Russian baths for ladies and gentlemen. Between 500 and 600 bathers will be accommodated at one time.

**A Statue of Queen Victoria** by Mr. F. W. Pomeroy is to be placed in the main entrance-hall of the municipal buildings at Woolwich.

**"The Building Magazine"** is the newest monthly, price 6d. nett. It is a poor production, though well printed. Boom articles of trade firms, with borrowed blocks, seem to be the main feature.

**Tamworth Library Competition.**—A Dublin correspondent states that he applied in vain for the conditions in the competition for a new library at Tamworth. He suggests it may be a case of "No Irish need apply."

**Windsor Police Buildings.**—The present borough police-station having been condemned by the Home Office, it has been decided to build a new police and fire-station buildings with court-house on Crown land in the centre of the town, at a probable cost of £10,000.

**The Official Report of the International Fire Prevention Congress**, held in London last July, has just been issued by the "Public Health Engineer," price 20s. nett. It is quite a big book of more than 200 pages, and certain parts of it are printed in German and French.

**Underground Bakehouses.**—In view of the fact that after January 1st next no underground bakehouse can be used unless sanctioned by the metropolitan borough councils, great attention is being paid to these places by the Public Health Committee of the Stepney Council, who, wherever possible, will insist on the height being at least 8ft., with a cubical capacity of 1,500ft.

**Competition Reform Society.**—The committee disapproves of the conditions in the four following competitions:—Shops and workmen's dwellings at Kilmarnock; public library at Coedfranc, Skewen; pavilion and winter gardens at Bray, co. Wicklow; and additions to Jeffs' Poplar Hydro at Matlock Bank. The grounds of objection are in each case that there is no professional assessor, that the premiums are insufficient, and that the promoters do not bind themselves to adopt or carry out any of the designs submitted, &c. Members are therefore requested to abstain from competing unless the conditions are satisfactorily revised.

**A Crematorium at Ilford** is being erected in the City of London Cemetery, at a cost of £7,000. The design provides for a hall 27ft. in length by 24ft. in width for the mourners to assemble in, with a large waiting-room adjacent and leading from the hall. The cremating chamber will be at the rear of the hall, and will be of sufficient size to allow two cremating furnaces to be erected. At the present time, however, it is intended to erect only one furnace, the flue of which will be carried up in the centre of an ornamental tower about 80ft. in height. The design of the crematorium is Gothic in style, and is intended to harmonize with the existing chapels and buildings in the cemetery.

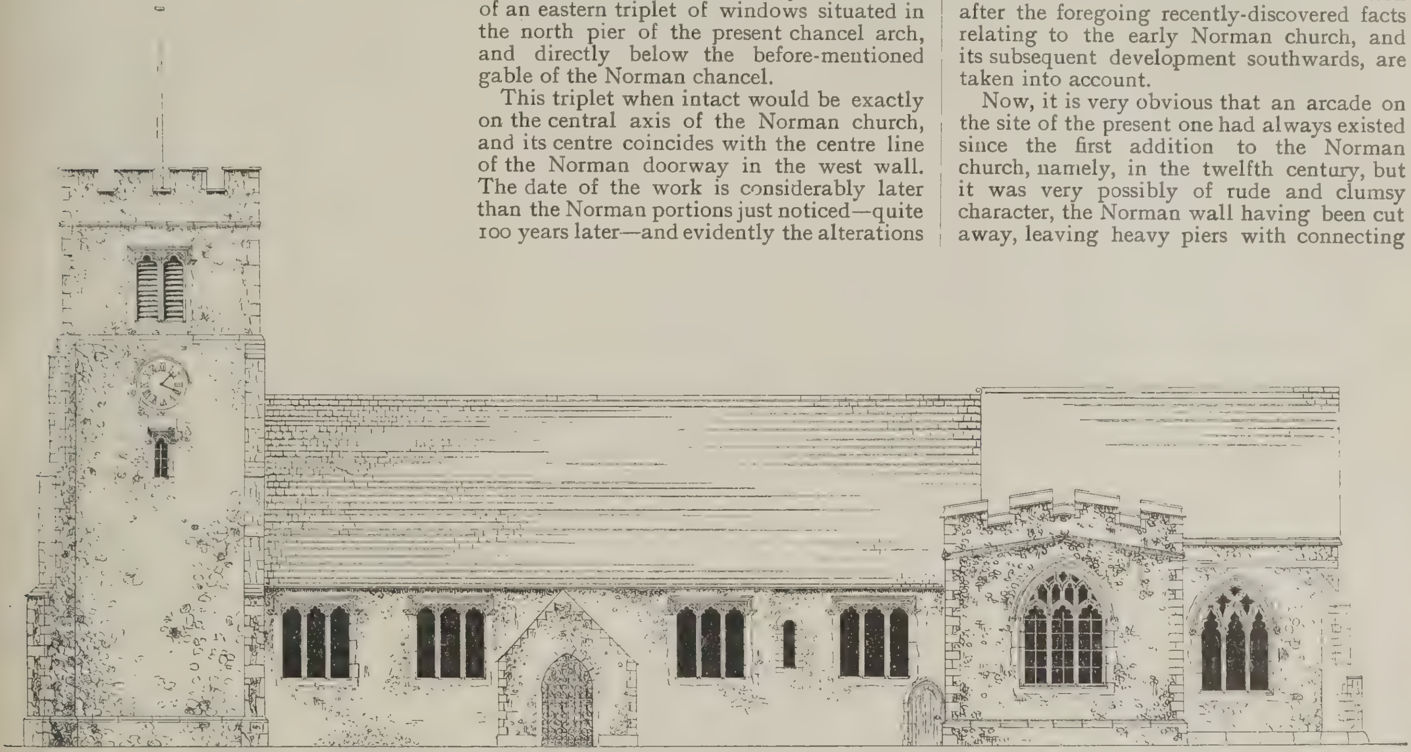
**The Edinburgh Photographic Society** opened its session last week, when Mr. David M'Arthy, architect, the new president, delivered an address on "Old Edinburgh." Three years ago, he said, the then president, Mr. Eddington, had advocated the formation of a section of the Society to make a survey of the city, and this idea having been taken up by the Council, the city was divided into five sections. The Society appointed him chairman of the Central Section, which included Old Edinburgh, and he proposed that night to give some instances of what the survey had accomplished in the old town, the historic mile between the Castle and Holyrood. Several members of the Society had responded to his appeal for negatives, prints and lantern slides, one gentleman alone sending no fewer than fifty-two half-plate negatives.

# ST. PAULINUS, CRAYFORD, KENT.

### By W. BRAXTON SINCLAIR.

THE village of Crayford, or Creccanford—this latter being its name in the Roman period—was an important locality in ancient times, for "the Great Road (Watling Street) from Dover to London here crosses the Cray, and the first great Saxon victory over the Britons was gained at the ford here in A.D. 457, from which the conquest of England may be dated."

The church stands on the summit of a lofty hill which slopes down to the River Cray; the village clings to the side of the hill and presents a straggling picturesqueness, crowned at the highest point by the rising church tower that lends a touch of stateliness to the otherwise humble surroundings. The church is rendered unique on account of its unusual arrangement of plan (see centre plate in this issue). The nave, 44ft. by 62ft., is divided in the centre by an arcade of four arches and half an arch into two almost equal parts, which have been termed "twin naves." This arcade is completed at its easternmost extremity by half an arch or flying arch abutting immediately over the centre of the depressed chancel arch, the latter not being buttressed in any way to receive this extraordinary side-thrust. The chancel has then been laid down on an axis precisely continuous with the arcade.



CRAYFORD CHURCH, KENT: SOUTH ELEVATION. MEASURED AND DRAWN BY W. BRAXTON SINCLAIR.

The north and west walls are the oldest parts of the structure, containing most of the early Norman work which remains. Of these sufficient exist to enable the plan of the early Norman fabric to be determined with absolute certainty. The west wall contains the remains of the recently-discovered western doorway, which is for the most part below the existing ground level and consists of the lower part of the stone jambs and sill, executed in tufa. To the right of this doorway is a patch of Norman diagonal flintwork about five courses high. The north-west angle is also constructed with tufa in long-and-short work with very wide mortar joints, and is almost intact from eaves to ground. The south-west angle on the other side of the doorway is indicated by a straight joint, thus fixing the width of the early Norman nave, 26ft. 6in. outside. The length of this early nave is then determined by the presence of tufa quoins in the north wall at a distance of 44ft. 9in. from the north-west angle; these are not so well preserved as the latter, but are sufficient to prove the position of the eastern extremity of the first nave. Finally, the Norman chancel continues eastwards for a further distance of 22ft.; thus the entire length of the Norman structure coincides exactly with the length of the present nave; the early chancel is identified by the unmistakable Norman walling of tufa (the mortar being identical with the other Norman portions) in the lower part of the north-east "twin" gable, and forming a part of the Norman chancel gable, over which the present gable is raised. A further proof is established by the remains of an eastern triplet of windows situated in the north pier of the present chancel arch, and directly below the before-mentioned gable of the Norman chancel.

This triplet when intact would be exactly on the central axis of the Norman church, and its centre coincides with the centre line of the Norman doorway in the west wall. The date of the work is considerably later than the Norman portions just noticed—quite 100 years later—and evidently the alterations carried out at this period were somewhat extensive.

The north wall of the small nave was pierced with a pointed doorway in the centre and two round-headed windows spaced equally on each side. It may be stated here that the Early Pointed doorways and round-headed windows in both the north and south walls of the present nave, and the triplet, are all of the same date (late twelfth century), as the material, jointing and workmanship clearly testify, notwithstanding the conflicting forms of arch.

With regard to the south wall of the Norman church (which occupied the position of the present central arcade), the course of alteration pursued can only be arrived at by a certain amount of conjecture, and by the exclusion of those theories which prove untenable. The Rev. G. M. Livett, F.S.A., in his paper on Crayford Church[*] demonstrates that before the ultimate extension of the nave southwards, as now seen, the old Norman church most probably had an aisle and chantry chapel added to its south side in the twelfth century, and the doorway and round-headed windows of that date now present in the south wall are derived from that addition, and were reinserted as they now remain during the Decorated period, when it is thought the present south wall and chancel were erected. There are two reasons for this conclusion. First, it is highly improbable that the twelfth-century builders would add an aisle of equal width to the nave (21ft.) and the whole length of nave and chancel, as the present south wall would suggest. Secondly, if such had been the case, the question arises respecting the chancel of such a church, the small Norman one being totally inadequate for the size thus produced. But the Norman chancel was the one employed in this period (twelfth century), as the insertion of the east triplet of windows proves.

To return to the subject of the nave arcade. It has been considered by several that prior to its construction, about 1400 or thereabouts, the church had the usual complement of central nave and aisles, thus necessarily involving two arcades. But this theory can be dismissed without further consideration after the foregoing recently-discovered facts relating to the early Norman church, and its subsequent development southwards, are taken into account.

Now, it is very obvious that an arcade on the site of the present one had always existed since the first addition to the Norman church, namely, in the twelfth century, but it was very possibly of rude and clumsy character, the Norman wall having been cut away, leaving heavy piers with connecting arches turned over. This then was perhaps the type of arcade prior to the construction of the present one in the early part of the fifteenth century.

That a flying arch was a part of a former structure is most probable when it is understood that the chancel and its arch were built during the Decorated period, while the old arcade was standing, thus necessitating the expedient of a flying arch, because a respond was an impossibility. The demolition of this clumsy piece of patchwork, as it inevitably must have been, for the not unpleasing arcade under discussion was in all likelihood, as Mr. Livett states, carried out for purely æsthetic considerations.

A close inspection of the half arch reveals interesting details, the most apparent being the very large stones employed in the spandrel enclosed by the half arch and another, in contradistinction to the very moderate-sized stones used in all the others. This perhaps may be explained as an attempt to relieve in some measure the thrust sustained by the chancel arch. The stones forming the spandrel are built out in the form of corbelling, the pier carrying a good proportion of the weight thus imparted; in fact, one of the stones that forms a corbel testifies, by the presence of a crack, the nature of the strain it is subjected to. The large stones are well bonded with the other work, and as a whole give the impression that this mode of construction was of deliberate intention.

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[*] See "Archæologia Cantiana," vol. xxvi.

# SHEFFIELD ARCHITECTS.

### President's Spirited Criticism.

MR. THOMAS WINDER delivered his presidential address to the Sheffield Society of Architects and Surveyors last Thursday. The burning question of the day was, he said, the provision of so-called "artizans' dwellings." This question should very closely affect their profession but for the City Council view that it was undesirable to introduce "professionalism" into it. The City Council recently had an opportunity of getting the benefit of the experience and ability of the whole of the Sheffield architects, but was most careful so to frame its conditions as to prevent the majority of them from competing. They knew that their members could and would have given invaluable assistance in the provision of a sanitary and convenient cottage at the minimum cost with the maximum accommodation, which would comply with the Corporation by-laws (this was a "sine qua non" unless the City Council was building), and would also conform to the fads of the Local Government Board, one of which was that the smell of cooking must be confined to the kitchens. The authorities were making a cruel and gigantic blunder in the way they were approaching this most difficult social problem. They condemned a large area of property, and destroyed numbers of houses long before others were erected to take their place. This could only result in the poor creatures who were turned out herding in already overcrowded houses. What were wanted were small, well-built, inexpensive houses, of from one to five rooms. He was of opinion that if corporations could be induced to adopt the system in vogue amongst railway and waterworks contractors, to erect iron houses, they might in twenty or thirty years remove them and erect others on sites which would then be more suitable, making a handsome profit out of the improved value of the old sites. He believed the Crofts tenements would prove a mistake. If the site was as insanitary as they were given to understand, the erection of the present barracks upon a subsoil permeated with the residuary legacies of the previous centuries' occupation was at least a doubtful experiment.

### Sheffield's New By-laws.

There was at present a re-issue of by-laws hanging over them. They had endeavoured to convince the small committee of the City Council who were to engineer them through the Local Government Board's offices that their training might render their assistance and advice of value to the city, and that endeavours by architects and surveyors to reduce the cost of buildings and roads could only be unselfish. He said "the small committee" advisedly, for although the by-laws, should they become law, would most seriously cripple Sheffield industries, and would add very greatly to the cost of building, without anything like adequately corresponding advantages, he could scarcely find a town councillor outside that committee who had any personal knowledge of the subject. Their training had taught them that every ounce of material put into a structure beyond what was actually necessary for structural or artistic effect was worse than thrown away, and that the use of excessive or too costly material was simply penalising the future tenant of such structure, and failing in the trust reposed upon them by their clients. The piling up of by-laws and Acts of Parliament for municipal or urban aggrandisement was a very grave menace to the city's future well-being. The fact that a person who inadvertently or otherwise broke a by-law was allowed in some cases to continue to do so on payment of an annual fine was proof that such by-law was unnecessary. This was further proved by the fact that corporations repeatedly ignored their own by-laws. To fine a working man for "erecting" obsolete tramcars upon his garden patch, because they were not incombustible, and because the walls were not 9in. thick; and to oppose the erection of corrugated iron buildings because the walls did not come up to the thickness required by the by-laws, was incompatible with the fact that the Corporation allowed a second storey of wood to be put upon an existing wooden erection on its own market premises, and that in dangerous proximity to its own Corn Exchange. Again, when architects sent in building plans, they knew from painful experience they must not step over the building line, but this rule did not hold good when the Tramway Committee were erecting tram sheds or the Highway Department premises for themselves. The new by-laws would require rooms in dwelling-houses to be 9ft. high throughout, but they saw from the papers that if the houses were erected by the Corporation 7ft. 9in. became a sanitary height.

# Correspondence.

### Thickness for Glazing.

*To the Editor of* THE BUILDERS' JOURNAL.

SIR,—Since replying to the enquiry as to the thickness of glass to resist wind-pressure and vibration from traffic, I have received a letter from Professor Perry in which he suggests the use of the formula for a rectangular plate of length $l$ inches, breadth $b$ inches, thickness $t$ inches, subject to an excess pressure of $p$ lbs. per sq. in. on one side more than the other, encastré at the edges. We know the greatest tensile or compressive stress in the material $f$ lbs. per sq. in. to be

$$f = \tfrac{1}{2}\frac{l^4}{l^4+b^4}\frac{b^2}{t^2}p \quad . \quad . \quad . \quad (1).$$

Thus if the plate is a square of $s$ inches edge, or if $l = b = s$ inches, then (1) becomes

$$f = \frac{s^2p}{4t^2} \quad . \quad . \quad . \quad . \quad (2).$$

Thus if $s = 120$, $p = \frac{50}{144}$, $t = \frac{1}{3}$, we find $f$ to be 11,250lbs. per sq. in.

Professor Perry says that he does not like to do more than suggest to practical people the use of a formula like this, which is only known to be true for flat plates loaded so as not to sag perceptibly. It is used by engineers who wish to make flat plates strong enough to resist steam pressure. He would have no hesitation in using this formula for plates of glass, say, 12in. sq. and ½in. or ¼in. thick, subjected to great pressures of water or steam. And he does not see why it should not be used for ordinary large panes of sheet-glass.

In my reply I took 0·34in. as the thickness for panes 10ft. by 10ft.; I measured this from an actual example. It is plain that the maximum wind-pressure where such panes subsist is very much less than the amount quoted, because I think that failure of such panes from wind-pressure is rare.

The elements of uncertainty are variations of recorded strengths of glass—say, 2,500lbs. to 9,000lbs. per sq. in.—and the maximum wind-pressure in the locality. Of course, in a given pane the stress anywhere is proportional to the wind-pressure.

It is evident from the formula that if 0·34in. is the proper thickness for a square pane of 10ft. side, 0·68in. is the proper thickness for a square pane of 20ft. side. Also, for a rectangular pane of breadth $b$ inches and length $l$ inches, work out the value of

$$0{\cdot}0118\, b \div \sqrt{1 + \frac{b^4}{l^4}}.$$

Multiply 0·34 (or whatever is considered the right thickness of a 10ft. sq. pane) by this to get the proper thickness of the rectangular pane. It is evident that the proper thickness of some particular size ought to be settled by actual experiment; the formulæ will then enable the thicknesses of all other panes to be settled. For myself, I should be inclined to get experiments made by water-pressure on panes of several sizes to test whether the foregoing formulæ are really to be relied upon.—Yours truly, P.

# Enquiries Answered.

*The services of a large staff of experts are at the disposal of readers who require information on architectural, constructional or legal matters. Questions should in all cases be addressed to the Editor. The querist's name and address must always be given, not necessarily for publication.*

### Rough-Cast.

STUCCO writes: "Would rough-cast composed of lias lime and gravel stand in Shropshire?"

Yes, very well, if the lime were truly hydraulic, though local conditions might alter the weathering qualities slightly, as in a chemical manufacturing town or a large town where volumes of sulphurous smoke are emitted; in such circumstances Portland cement should be used.

### English Architecture.

STONEHOUSE.—STUDENT writes: "Kindly answer the following question:– State, with the dates or the kings' reigns, the classification of English architecture given by Mr. Rickman, and that of Mr. Sharpe. Illustrate by sketches one or two features, mouldings and ornaments in use at each period, and state and sketch the changes in window tracery and in ornament which occurred."

We have over and over again stated that our enquiry columns are primarily intended for practical questions. It is preposterous to expect us to answer an examination question like that above. Consult Rickman's "Styles of Architecture in England" and Sharpe's "Seven Periods of English Architecture."

### Buildings to Measure around Buxton.

BRADFORD. — STUDENT writes: "Kindly mention some old work worth measuring within a radius of 20 miles of Buxton (excluding Haddon Hall and Chatsworth House)."

*Bakewell*, 12 miles from Buxton. All Saints' Church is a large cruciform building surmounted by an octagon tower and spire; its length is 150ft. and its breadth across transepts 105ft. The west doorway is Norman and the doorway of north aisle is good Early English work. The large chancel is Early English and possesses the unusual feature of two east windows. *Ashford*, 10 miles. The church of the Holy Trinity has a good Norman tympanum over the south door. *Longstone*, 10 miles. St. Giles has a finely covered fifteenth-century timber roof. *Tideswell*, 5½ miles. St. John the Baptist is a grand cruciform edifice with tower at west end almost entirely of fourteenth-century date. The chancel and transept windows are very fine. It is a magnificent church, eminently suitable for measuring.

G. A. T. M.

# Obituary.

**Mr. George Holdom**, builder, of 21, Guildhall Street, Folkestone, died recently.

**Mr. William Wilson**, builder, of North Walsham, died recently at the age of 64.

**Mr. Herbert Ford, F.R.I.B.A.**, of the firm of Messrs. Ford, Son & Burrows, architects, 21, Aldermanbury, E.C., who died aged seventy, left £22,547.

# Complete List of Contracts Open.

| DATE OF DELIVERY. | WORK TO BE EXECUTED. | FOR WHOM. | FROM WHOM FORMS OF TENDERS MAY BE OBTAINED. |
|---|---|---|---|
| | **BUILDING:** | | |
| Oct. 22 | Hereford—Shedding | Corporation | J. Parker, City Surveyor, Mansion House, Hereford. |
| „ 22 | Bristol—School | Education Committee | La Trobe & Weston, 20 Clare Street, Bristol. |
| „ 22 | Huddersfield—Chimney | —— | J. Kirk & Sons Architects, Huddersfield. |
| „ 22 | Prestwich, Manchester—Seventeen Cottages | Co-op. & Industrial Soc., Ltd. | Clerk, Central Stores, Warwick Street, Prestwich. |
| „ 23 | Sheffield—Shops. &c. | —— | Hemsoll & Chapman, 18 Norfolk Row, Sheffield. |
| „ 23 | Stotfield, Scotland—Villa | —— | J. Wittet, Architect, Elgin. |
| „ 23 | Manchester—Terra-cotta | Watch Committee | W. Windsor, 37 Brown Street, Manchester. |
| „ 23 | Leicester—Car Sheds | Tramways Committee | G. Mawbey. Engineer, Town Hall, Leicester. |
| „ 23 | Portsmouth—School | Education Committee | Rake & Cogswell, Architects, Prudential Buildings, Landport. |
| „ 23 | St. Govan's Head, nr. Pembroke—Coastguard Detachment | Admiralty | Civil Engineer, H.M. Dockyard, Pembroke Dock. |
| „ 23 | London, E.—Sundry Works at Infirmary | St. Geo.'s-in-the-East Guardians | J. R. Brown, Clerk, Guardian's Office, Raine St., Old Gravel Lane. |
| „ 24 | Antrim—Alterations, &c., to Church | —— | W. D. R. Taggart, 11 Bridge Street, Belfast. |
| „ 24 | Bexhill, Sussex—Clock Tower | Corporation | G. Ball Borough Surveyor, Town Hall, Bexhill. |
| „ 24 | Leeds—Wall, &c. | Gas Committee | R. H. Townsley, Gen. Manager, Gas Offices, East Parade, Leeds. |
| „ 24 | Bagworth—Forty Workmen's Houses | New Bagworth Coal Co., Ltd. | J. P. Harper, All Saints' Chambers, Derby. |
| „ 26 | Bradford—Hospital Pavilion | Guardians | F. Holland, 11 Parkinson's Chambers, Hustlergate, Bradford. |
| „ 26 | Cardiff—Schools | School Board | Veall & Sant, Architects, Arcade Chambers, High Street, Cardiff. |
| „ 26 | Darfield, Yorks—Nine Houses | T. Wilkinson | A. B. Linford, Architect, Carlton Villa, Wombwell. |
| „ 26 | Oakworth, near Keighley, Yorks—Cemetery Works, Chapels | Urban District Council | Jackson, Priestman & Marks, Engineers, Keighley. |
| „ 26 | Ilford—Depôt, &c. | Urban District Council | H. Shaw, Council's Surveyor, Town Hall, Ilford. |
| „ 26 | Meesden Bridge. Herts—Reconstructing Bridge | Herts County Council | U. A. Smith, County Surveyor, Hatfield. |
| „ 27 | Portland. Dorset—Additions, &c., to Police Station | Standing Joint Committee | County Surveyor, Shirehall, Dorchester. |
| „ 27 | Bury, Lancs—Re-erection of Shop. &c. | Tramways Committee | A. W. Bradley, Borough Engineer, Municipal Offices, Bank Street, Bury, Lancs. |
| „ 27 | Hackney—Block of Five-storey Workmen's Dwellings | London County Council | Architect's Department, Housing Sec., 19 Charing Cross Rd., W.C. |
| „ 27 | London, S.W.—Block of 5-Storey Workmen's Dwellings & Seven Cottages. | London County Council | Architect's Department, Housing Sec., 19 Charing Cross Rd., W.C. |
| „ 28 | London. S.W.—Reconstruction of Baths | Westminster City Council | Works Deptment., Westminster City Hall, Charing Cross Rd., W.C. |
| „ 28 | Pontygwaith, Wales—Altering, &c. Institute | —— | Secretary, Working Men's Institute, Pontygwaith. |
| „ 29 | Halifax—Warehouse, &c. | W. Conway & Sons, Ltd. | R. Horsfall & Son, 221 Commercial Street, Halifax. |
| „ 29 | Merthyr Tydfil—Walls, Playgrounds, &c. | School Board | E. Stephens, Clerk, Town Hall, Merthyr Tydfil. |
| „ 29 | Ipswich—Convenience | —— | E. Buckham, Borough Surveyor. Town Hall. Ipswich |
| „ 30 | Islington, N.—Superstructure of Postal Stores | Commissioners of H.M. Works, &c | Secretary, H.M. Office of Works, &c., Storey's Gate, S.W. |
| „ 30 | Brawdy, Pembrokeshire—Altering, &c., Chapel | —— | D. E. Thomas, Architect, Haverfordwest. |
| „ 30 | Hull—Bath | Corporation | A. E. White, City Engineer, Town Hall, Hull. |
| „ 30 | Pantywyll, Wales—Rebuilding Inn | —— | C. M. Davies, 12 High Street, Merthyr. |
| „ 31 | Clonmel, Ireland—Church. &c. | —— | Rev. H. Kevin, Clonmel. |
| „ 31 | Sheffield—Silica and Fireclay Goods | United Gas Light Co. | J. W. Morrison, Engineer, Company's Offices, Commercial Street, Sheffield. |
| „ 31 | Bristol—Central Library | Libraries Committee | Bernard & Son, 4 St. Stephen's Chambers. Baldwin Street, Bristol. |
| Nov. 3 | Tottenham, N.—Three Underground Conveniences | Urban District Council | W. H. Prescott, 712 High Road, Tottenham, N. |
| „ 3 | St. Columb Minor, Cornwall—Church | —— | S. Hill, Architect, Green Lane. Redruth. |
| „ 4 | Leavesden, near Watford—Sashes and Alterations | Metropolitan Asylums Board | T. D. Mann, Clerk. Board's Offices, Embankment, E.C. |
| „ 4 | Willesden, N.W.—Workhouse Infirmary | Guardians | A. S. Snell, 22 Southampton Buildings. Chancery Lane, W.C. |
| „ 4 | Tooting, S.W.—Completion of Bounday Wall | Metropolitan Asylums Board | T. D. Mann, Clerk, Board's Offices, Embankment, E.C. |
| „ 6 | Ewell, Surrey—Laundry and Mortuary | Asylum Committee | Clerk, Asylums Committee, 6 Waterloo Place, S.W. |
| „ 10 | Lewisham—Branch Library | Borough Council | J. R. Vining, 89 Chancery Lane, W.C. |
| | **ENGINEERING** | | |
| Oct. 23 | Oakworth, Yorks—Water-Mains | Urban District Council | Surveyor, Council Offices, Oakworth, Yorks. |
| „ 23 | Holyhead—Chimney Shaft | Urban District Council | D. F. White, Electricity Works, Bangor, North Wales. |
| „ 24 | Leeds—Hydraulic Lifts | Gas Committee | R. H. Townsley, General Manager, Gas Offices. East Parade, Leeds. |
| „ 26 | London, S.W.—Goods and Electrical Fittings | London County Council | Clerk to Council (Stores Branch), 19 Charing Cross Road, W.C. |
| „ 26 | Harrogate—Iron & Glass Pump-room & Colonnade | —— | F. Bagshaw, Borough Engineer, Municipal Offices, Harrogate. |
| „ 26 | Wolverhampton—Sinking Borehole | Corporation | E. A. B. Woodward. Waterwks. Engr., Town Hall, Wolverhampton. |
| „ 27 | Canterbury—Tanks | Drainage Committee | City Engineer, Guildhall Street, Canterbury. |
| „ 27 | Glemsford, Suffolk—Borehole | Urban District Council | J. T. Eayrs, 39 Corporation Street, Birmingham. |
| „ 27 | Middleton Junction and Castleton—Bridges, &c. | Lancs & Yorks Railway Co. | Engineer, Hunt's Bank, Manchester. |
| „ 28 | Bamford, near Sheffield—Aqueduct | Derwent Valley Water Board | E. Sandeman, Engineer's Office, Bamford. |
| „ 28 | Galway—Waterworks | Urban District Council | J. Perry, County Surveyor, Galway. |
| „ 29 | Ipswich—Piling | —— | E. Buckham, Borough Surveyor, Town Hall, Ipswich. |
| „ 29 | Belfast—Railway Extension | Belfast & County Down Rly. Co. | Secretary, Queen's Quay Terminus, Belfast. |
| „ 30 | Marina, Upper Barracca, Malta—Lift | Crown Agents for the Colonies | Receiver-General and Director of Contracts, Valletta, Malta. |
| „ 31 | Swansea—Ducts, &c. | Corporation | C. A. L. Prusmann, Borough Electrical Engineer. Strand, Swansea. |
| „ 31 | Swansea—Tramways, &c. | Corporation | J. Thomas, Town Clerk, Guildhall, Swansea. |
| „ 31 | Tregaron, Wales—Reservoir, &c. | District Council | J. Davis & Son, Engineers, Llanelly. |
| „ 31 | Todmorden—Plant | Corporation | H. Waring, Electrical Engineer's Office, Todmorden. |
| „ 31 | Vinaroz, Spain—Dredging Works | —— | Ministry of Public Works Castellon, Spain. |
| „ 31 | Wick, Scotland—Wharf | Harbour Trustees | J. Barron, Engineer, Aberdeen. |
| Nov. 2 | Kingsbridge, Devon—Waterworks | Urban District Council | T. W. Latham, Engineer, Council Offices, Kingsbridge. |
| „ 2 | Cromer and Mondesley, Norfolk—Railway | Joint Railways Committee | Company's Engineer, King's Cross Railway Station, London, N. |
| „ 2 | Perth, Western Australia—Railway Carriages | —— | Agent-General for Western Australia, 15 Victoria St., Westminster. |
| „ 2 | Madrid—Wharf Works | Ministry of Public Works | Ministry of Agric., Industries, Commerce & Public Wks., Madrid. |
| „ 3 | West Ham—Electrical Plant | London County Council | Engineer's Department, County Hall, Spring Gardens, S.W. |
| „ 3 | Birmingham—Destructor, &c. | Health Committee | Superintendent, Montague Street Wharf, Birmingham. |
| „ 3 | Bovey Tracey, Devon—Reservoir | Newton Abbot R.D.C. | W. Fox & B. A. Tatton, 5 Victoria Street, Westminster, S.W. |
| „ 3 | Portsmouth—Pumping Station. &c. | Town Council | Borough Engineer, Town Hall, Portsmouth. |
| „ 7 | Bridlington—Parade Extension Works | Corporation | E. R. Matthews, Borough Engineer. Town Hall, Bridlington. |
| „ 12 | Ashford, Middlesex—Well | Managers, W. Lon. School Bd. | G. M. Taylor, 27 Great George Street, Westminster, S.W. |
| „ 16 | Llanwrtyd Wells, Brecon—Reservoir, &c. | Builth R.D.C. | R. L. Bamford, Surveyor, Wildemarsh Street, Hereford. |
| Dec. 15 | New York, U.S.A.—Tunnels | Pennsylvania, New Jersey & New York Railway Co. | Chief Engineer, 20 West Thirty-fourth Street, New York City, New York State, U.S.A. |
| „ 15 | New York, U.S.A.—Tunnels under North River | Pennsylvania, New York & Long Island Railway Co. | Chief Engineer. 20 West Thirty-fourth Street, New York City, New York State, U.S.A. |
| „ 15 | New York, U.S.A.—Tunnels to Long Island | Pennsylvania, New York & Long Island Railway Co. | Chief Engineer, 20 West Thirty-fourth Street, New York City, New York State, U.S.A. |
| 15 | Los Andes, Chili—Railway | —— | Commercial Intelligence Branch, Board of Trade, 50 Parliament Street, S.W. |
| 1904.<br>Jan. 19 | Rotherhithe and Radcliff—Footway Tunnel | London County Council | Engineer's Department, County Hall, Spring Gardens, S.W. |
| Feb. 1 | Cairo—Three Road Bridges over Nile | Ministry of Public Works | Commercial Intelligence Branch, Board of Trade, 50 Parliament Street, S.W. |
| | **FURNITURE:** | | |
| Oct. 22 | Nenagh, Ireland—Bedsteads | Guardians | H. J. Sheehan, Clerk, Guardian's Offices, Nenagh. |
| „ 22 | Salford—Furniture | Guardians | H. Lord, 42 Deansgate, Manchester. |
| „ 26 | Newport—Furniture | County Council | W. N. Gough, 24 Bridge Street, Bristol. |
| | **IRON AND STEEL:** | | |
| Oct. 24 | Waterloo, Lancs—Railing, &c. | Urban District Council | F. S. Yates, Council's Surveyor, Town Hall, Waterloo. |
| „ 26 | Torquay—Ventilating Shafts | Town Council | H. A. Garrett, Engineer, Town Hall Chambers. Torquay. |
| „ 26 | London, S.W.—Cast-iron, Iron and Steel, Ironmongery, &c. | London County Council | Clerk to Council (Stores Branch), 19 Charing Cross Road, W.C. |
| | **PAINTING AND PLUMBING:** | | |
| Oct. 26 | London, S.W.—Plumbers' Fittings, &c., Glass, &c. | London County Council | Clerk to Council (Stores Branch), 19 Charing Cross Road, W.C. |
| „ 27 | Leeds—Cleaning Down, Painting, &c. | London County Council | City Engineer, Municipal Buildings, Leeds. |
| | **ROADS AND CARTAGE:** | | |
| Oct. 22 | London, W.—Road Works | Ealing Town Council | C. Jones, Borough Engineer, Town Hall, Ealing, W. |
| „ 22 | Deal—Flints and Gravel | Corporation | T. C. Golder, Borough Surveyor, 23 Queen Street, Deal. |
| „ 22 | Southend-on-Sea—Making-up Streets | Corporation | E. J. Elford, Borough Surveyor, Southend-on-Sea. |
| „ 23 | Swindon—Road Works | Corporation | H. J. Hamp, Borough Surveyor, Town Hall, Swindon. |
| „ 24 | Truro—Steam Rolling | Rural District Council | J. Retalluck, Surveyor, Ventongimps, Callestick, R.S.O. |

# Complete List of Contracts Open —*continued.*

| DATE OF DELIVERY. | WORK TO BE EXECUTED. | FOR WHOM. | FROM WHOM FORMS OF TENDERS MAY BE OBTAINED. |
|---|---|---|---|
| | **ROADS AND CARTAGE**—*continued.* | | |
| Oct. 24 | Wallsend. Northumberland—Streets .. .. .. .. | Corporation .. .. .. .. | G. Hollings, Borough Surveyor, High Street, Wallsend. |
| " 25 | London, N.—Road Works .. .. .. .. .. .. | Hornsey U.D.C. .. .. .. | E. J. Lovegrove, 99 Southwood Lane, Highgate, N. |
| " 26 | Weymouth—Making-up Road .. .. .. .. .. | Melcombe Regis Burial Board .. | S. Jackson, Surveyor, Bridge Chambers, Weymouth. |
| " 28 | Gravesend - Materials .. .. .. .. .. | Town Council .. .. .. | C. E. Hatten, Town Clerk, Court House, Gravesend. |
| Nov. 2 | Hastings—Granite Kerb .. .. .. .. .. .. | Corporation.. .. .. .. | P. H. Palmer, Borough Engineer, Town Hall, Hastings. |
| 1904.<br>Jan. 19 | Rotherhithe and Radcliffe—Carriageway .. .. .. .. | London County Council .. .. | Engineer's Department, County Hall, Spring Gardens, S W. |
| | **SANITARY:** | | |
| " 26 | Woodford, Essex—Sewerage and Sewage-disposal Works .. | Urban District Council .. .. | W. Spinks, 20 Park Row, Leeds. |
| Oct. 26 | London, N.—Sewer .. .. .. .. .. .. | Hornsey U.D.C. .. .. .. | E. J. Lovegrove, 99 Southwood Lane, Highgate, N. |
| " 26 | London, S.W.—Disinfectants, &c. .. .. .. .. .. | London County Council .. .. | Clerk to Council (Stores Branch), 19 Charing Cross Road, W.C. |
| " 27 | Canterbury—Sewer, &c. .. .. .. .. .. .. | Drainage Committee .. .. | City Engineer, Guildhall Street, Canterbury. |
| " 27 | Mountain Ash, Wales—Sewers .. .. .. .. .. | Urban District Council .. .. | Council's Surveyor, Town Hall, Mountain Ash, Wales. |
| " 30 | Hale, Cheshire—Removal of Nightsoil .. .. .. .. | Urban District Council .. .. | J. G. Whyatt, Clerk, Council Offices, Hale. |
| Nov. 3 | Portsmouth—Sewer, &c. .. .. .. .. .. .. | Town Council .. .. .. | Borough Engineer's Offices, Town Hall, Portsmouth. |
| " 3 | Tottenham, N.—Three Underground Conveniences .. .. | Urban District Council .. .. | W. H. Prescott, 712 High Road Tottenham |
| " 24 | Belper—Sewage Outfall Works .. .. .. .. .. | Urban District Council .. .. | C. J. Lomax, 37 Cross Street, Manchester. |
| | **TIMBER:** | | |
| Oct. 26 | London, S.W.—Oak Posts, Firewood, &c. .. .. .. | London County Council .. .. | Clerk to Council (Stores Branch), 19 Charing Cross Road, W.C. |

# List of Competitions Open.

| DATE OF DELIVERY. | DESIGNS REQUIRED. | AMOUNT OF PREMIUM. | DEPOSIT REQUIRED FOR CONDITIONS, &C. | BY WHOM ADVERTISED. |
|---|---|---|---|---|
| Oct. 26 | Harrogate—Iron & Glass Pump-room & Colonnade | —— | £1 | F. Bagshaw, Borough Engineer, Municipal Office, Harrogate. |
| Nov. 9 | Kilmarnock – Shops and Workmen's Dwellings .. | £15 15s., £10 10s. £5. 5s. | —— | R. Blackwood, Burgh Surveyor, Market Bridge, Kilmarnock, Scotland. |
| " 9 | Skewen, Neath—Public Library .. .. .. .. | £10 10s | —— | S. Jones, Clerk, Old Road, Skewen, Neath. |
| " 14 | Tamworth—Public Library .. .. .. .. .. | £20, £10, £5 | —— | J. Matthews, Town Clerk, Bolebridge Street, Tamworth. |
| " 21 | Sunderland—Additions & Alterations to Town Hall | £100, £50, £25. | £5. | J. W. Moncur, Borough Engineer, Town Hall, Sunderland. |
| Dec. 1 | Wakefield—Reconstruction of Cattle Market .. | £52 10s., £26 5s. | £2. | E. R. Langhorne, Clerk to Governors of Charities, Wakefield. |
| " 16 | Lambeth—Public Library .. .. .. .. .. | —— | —— | H. J. Smith, Clerk, Town Hall Kennington Green, S.E. |
| 1904.<br>Mar. 31 | Vienna—Machinery to Lift Boats on Canal .. | 100,000, 75,000 & 50,000 kronen. | —— | Austro-Hungarian Consulate-General, 22 Laurence Pountney Lane, E.C. |
| No date | Liverpool—Cotton Exchange .. .. .. .. .. | —— | £2 2s. | P. Brown, Secretary, Liverpool Cotton Association, Ltd, 50 Brown's Buildings, Liverpool. |
| " | Glasgow—Branch Library .. .. .. .. .. | —— | —— | J. D. Marwick, Town Clerk, City Chambers, Glasgow. |
| " | Copenhagen—Rebuilding of Christiansborg Castle | £550. | —— | Folkething, Copenhagen. |
| " | Birkdale—Library .. .. .. .. .. .. | £50, £30, £15. | —— | Clerk, Council Offices, Birkdale. |

# Tenders.

*Information from accredited sources should be sent to "The Editor" at latest by noon on Monday if intended for publication in the following Wednesday's issue. Results of Tenders cannot be accepted unless they contain the name of the Architect or Surveyor for the work.*

*Addressed postcards on which lists of tenders may be stated will be sent post free on application to the Manager,* BUILDERS' JOURNAL, 9, *East Harding Street, E.C.*

**Barry (Glamorgan).**—For the erection of a central public library, Holton Road, for the Urban District Council. Messrs. C. E. Hutchinson & E. Harding Payne, architects, 11, John Street, Bedford Row, London, W.C.:—

| | | | | | Deduction for blue Forest of Dean. | | |
|---|---|---|---|---|---|---|---|
| Davies & Francis .. | £9,287 | 10 | 0 | .. | £9,189 | 11 | 0 |
| J. Prout .. .. .. | 7,745 | 10 | 6 | .. | 7,620 | 5 | 0 |
| H. S. Rendell .. | 7,624 | 15 | 0 | .. | 7,507 | 12 | 0 |
| Lloyd & Tape .. | 7,600 | 0 | 0 | .. | 7,554 | 0 | 0 |
| A. N. Coles .. .. | 7,465 | 17 | 7 | .. | 7,350 | 15 | 2 |
| Stephens, Bastow & Co., Ltd. .. | 7,413 | 0 | 0 | .. | 7,312 | 0 | 0 |
| Lattey & Co., Ltd. | 7,362 | 14 | 8 | .. | 7,212 | 14 | 8 |
| W. Britton .. .. | 7,307 | 2 | 8 | .. | 7,228 | 4 | 2 |
| J. Gibson .. .. | 7,162 | 0 | 0 | .. | 7,068 | 0 | 0 |
| W. Williams,* Cardiff .. .. .. | 6,900 | 0 | 0 | .. | 6,830 | 0 | 0 |

* Accepted.

**Bridlington.**—For the ironwork in connection with the erection of a shelter round the bandstand on Prince's Parade, for the Property Committee. Messrs. Magnall & Littlewoods, architects, 42, Spring Gardens, Manchester:—

| | | | |
|---|---|---|---|
| Lion Foundry Co., Kirkintilloch, Glasgow .. .. .. .. .. .. | £1,500 | 0 | 0 |
| H. Barrett & Sons, Bradford .. .. | 1,500 | 0 | 0 |
| J. Monk, Preston .. .. .. .. .. | 1,418 | 0 | 0 |
| Wright & Sons, Hull .. .. .. .. | 1,393 | 0 | 0 |
| Norton Brothers, Ilford .. .. .. | 1,361 | 0 | 0 |
| Storr & Sons, Bridlington.. .. .. | 1,299 | 10 | 0 |
| J. Allen, Senr., & Co., Glasgow .. | 1,271 | 5 | 5 |
| Naylor Brothers, Golborne, Lancs | 1,248 | 3 | 0 |
| Heenan & Froude, Manchester .. | 1,212 | 2 | 6 |
| J. Gill, Keighley .. .. .. .. .. | 1,153 | 0 | 0 |
| R. Bailey & Sons, Bridlington.. .. | 1,135 | 12 | 0 |
| D. Powner, Leeds .. .. .. .. | 1,124 | 8 | 9 |
| Schofield & Hancox, Manchester .. | 1,090 | 0 | 0 |
| Sloan & Davidson, Leeds .. .. .. | 1,038 | 10 | 0 |
| J. & A. Law, Glasgow.. .. .. .. | 1,030 | 0 | 0 |
| T. W. Ward, Sheffield .. .. .. | 950 | 16 | 0 |
| Jones & Sons, London .. .. .. | 950 | 0 | 0 |
| T. & F. Everingham, Bridlington .. | 940 | 0 | 0 |
| A. Dougill & Co., Leeds .. .. .. | 932 | 5 | 6 |
| T. W. Sykes,* Guiseley .. .. .. | 875 | 0 | 0 |

* Accepted.

**Dringhouses (Yorks).**—For providing and laying about 2,418 lineal yards of 6in., 9in. and 10in. sewers, together with the necessary outlets, manholes, flushing manholes and lampholes, and other work in connection therewith, at Dringhouses, in the county of York, for the Bishopsthorpe Rural District Council. Messrs. Fairbank & Son, engineers, Lendal Chambers, York:—

| | | | |
|---|---|---|---|
| Jones Brothers, Barnsley .. .. .. | £2,434 | 17 | 6 |
| V. Balmforth, Elland .. .. .. .. | 2,275 | 5 | 6 |
| Parker & Sharp, York .. .. .. | 1,964 | 14 | 3 |
| Edmundson & Wyatt, Oldham .. | 1,954 | 3 | 0 |
| Keswick & Sons, Blossoms Street, York .. .. .. .. .. .. .. | 1,934 | 0 | 0 |
| Morley & Sons, Keighley .. .. .. | 1,845 | 0 | 9 |
| T. Bell, Market Weighton.. .. .. | 1,791 | 9 | 9 |
| W. Binns, Bradford .. .. .. | 1,790 | 0 | 0 |
| Parkin & Co., Horsforth, near Leeds | 1,749 | 0 | 8 |
| A. Palframan, Whitby.. .. .. .. | 1,723 | 8 | 6 |
| Graham & Sons, Huddersfield .. | 1,714 | 12 | 3 |
| C. Birkill, Bishopsthorpe Road, York | 1,709 | 9 | 0 |
| A. & C. Harris, Leeds.. .. .. .. | 1,645 | 2 | 9 |
| A. Dickinson, Leeds .. .. .. | 1,634 | 2 | 7 |
| T. U. Simpson,* Burton Leonard, Leeds .. .. .. .. .. .. .. | 1,554 | 12 | 7 |

* Accepted.

**Eastbourne.**—For the erection of a new operating-room and alterations at the Princess Alice Memorial Hospital. Messrs. Rowland Plumbe & Harvey, architects, 13, Fitzroy Square, London, W.:—

| | |
|---|---|
| J. White .. .. .. .. .. .. .. .. | £1,412 |
| Cornwell & Son .. .. .. .. .. .. | 1,397 |
| Miller & Selmes .. .. .. .. .. | 1,300 |
| M. Hookham .. .. .. .. .. .. .. | 1,397 |
| M. Martin .. .. .. .. .. .. .. .. | 1,270 |
| J. Martin* .. .. .. .. .. .. .. .. | 1 245 |

* Accepted. [All of Eastbourne.]

**London, N.W.**—For the erection of tenements, stabling, sheds, workshops, &c., at their new depot and stone-yard at Lymington Road, Finchley Road, Hampstead, for the Hampstead Borough Council. Mr. O. E. Winter, A.M.I.C.E., borough engineer:—

| | |
|---|---|
| D. R. Patterson, Camden Town .. .. | £23,490 |
| Johnson & Son, Leicester .. .. .. .. | 21,900 |
| C. R. Price, Chiswell Street .. .. . | 20,403 |
| Sabey & Son, Islington .. .. .. .. | 20,390 |
| W. J. King, Hampstead .. .. .. .. | 20,279 |
| Wall & Co., Kentish Town .. .. .. .. | 20,091 |
| Kellett & Sons, Willesden .. .. .. .. | 19,869 |
| G. Neal, Kilburn .. .. .. .. .. .. | 19,529 |
| Gough & Co., Hendon .. .. .. .. .. | 19,484 |
| Oldrey & Sons, Hampstead .. .. .. | 19,297 |
| H. L. Holloway, Deptford .. .. .. .. | 18,973 |
| Patman & Fotheringham, Islington.. .. | 18.753 |
| Thomas & Edge, Woolwich .. .. .. | 18,683 |
| Leslie & Co, Kensington .. .. .. .. | 18,336 |
| Chessum & Sons, Bow.. .. .. .. .. | 18,228 |
| Dearing & Sons, Islington .. .. .. | 18,203 |
| J. Parsons .. .. .. .. .. .. .. | 18,178 |
| J. Appleby & Sons, Lambeth .. .. .. | 18,166 |
| H. Knight & Son,* Tottenham .. .. .. | 17,729 |
| J. Ferguson & Co., Holborn .. .. .. | 17,607 |
| S. E. Moss & Co., Southend-on-Sea .. | 17,036 |

[Borough engineer's estimate, £19,204.]
* Recommended for acceptance.

**Manchester.**—For the erection of a new warehouse for Messrs. James Spicer & Sons, in Whitworth Street West. Mr. J. Harold France, architect, 7, Chapel Walks, Manchester. Quantities by the architect:—

| | |
|---|---|
| William Brown & Sons .. .. .. .. | £13,853 |
| Young, Tinker & Young .. .. .. .. | 13 627 |
| William Southern & Sons .. .. .. .. | 13,320 |
| S. Megarity & Co. .. .. .. .. .. | 13,261 |
| Wilson & Toft .. .. .. .. .. .. .. | 13.256 |
| Robert Carlyle.. .. .. .. .. .. .. | 12,886 |
| R. Neill & Sons* .. .. .. .. .. .. | 12,800 |

* Accepted. [All of Manchester.]

**Marple.**—For the erection of ten houses to be built at Marple, for the Compstall Co-operative Industrial Society, Ltd. Messrs. Garlick & Wyatt, architects, Stockport Road, Marple:—

| | | | |
|---|---|---|---|
| J. T. Pott .. .. .. .. .. .. .. | £2,980 | 0 | 0 |
| Yarwood .. .. .. .. .. .. | 2,965 | 0 | 0 |
| Norgrove, Hyde .. .. .. .. .. | 2,895 | 0 | 0 |
| J. Waine .. .. .. .. .. .. .. | 2,827 | 0 | 0 |
| Wilson & Roberts, Stalybridge .. | 2,775 | 0 | 0 |
| Vessey, Openshaw & Vessey, Marple Bridge .. .. .. .. .. .. .. | 2,750 | 0 | 0 |
| S. Robinson & Sons, Hyde .. .. | 2,747 | 0 | 0 |
| Woodiwiss and Chadwick* .. .. | 2,713 | 0 | 0 |
| Clayton Brothers, Poynton .. .. | 2,650 | 0 | 0 |
| Sparrow .. .. .. .. .. .. .. | 2,598 | 7 | 4 |

* Accepted.

**Ripley (Surrey).**—For works of sewerage and sewage-disposal at Ripley, in the parish of Send and Ripley—such works include about 1,730yds. of stoneware pipe sewers, with manholes, lampholes, flushing chambers, pumping-station, outfall works and pumping machinery, for the Guildford Rural District Council. Mr. J. Austee, engineer, Commercial Road, Guildford:—

| | | | |
|---|---|---|---|
| W. Norris, Farnham .. .. .. .. | £6,975 | 0 | 0 |
| J. Jackson, Plaistow, Essex .. . | 6,652 | 19 | 0 |
| Johnson & Langley, Leicester.. .. | 6,651 | 2 | 8 |
| Osenton, Tilehurst, near Reading .. | 6,338 | 0 | 0 |
| Kavanagh & Co., Surbiton Hill .. | 6,164 | 0 | 0 |
| Hebbern, Walton-on-Thames.. .. | 5,926 | 0 | 0 |
| Trimm, Dorking .. .. .. .. .. | 5,819 | 0 | 9 |
| Higlett & Hammond, Guildford .. | 5,566 | 0 | 0 |
| G. A. Franks,* Station Approach, Guildford .. .. .. .. .. .. | 5,449 | 0 | 0 |
| Davis & Ball, Bromley, Kent .. | 5,439 | 7 | 3 |
| Streeters & Todhunter, Godalming | 5,243 | 0 | 0 |

* Accepted.

**Thornton Heath (Croydon).**—For the erection of a new sorting office at Thornton Heath, for H.M. Office of Works, &c.:—

| | |
|---|---|
| J. Pratt . .. .. .. .. .. .. .. | £2,159 |
| H. Leney & Sons .. .. .. .. .. .. | 1,640 |
| W. H. Lorden & Son .. .. .. .. .. | 1,588 |
| J. Quittenton .. .. .. .. .. .. .. | 1,570 |
| J. Ferguson & Co. .. .. .. .. .. .. | 1,549 |
| C. B. Roberts .. .. .. .. .. .. .. | 1,540 |
| J. Smith & Sons, Ltd. .. .. .. .. .. | 1.535 |
| Speechley & Smith .. .. .. .. .. .. | 1,519 |
| C. Ansell .. .. .. .. .. .. .. .. | 1,500 |
| C. Jackson .. .. .. .. .. .. .. .. | 1,498 |
| Truett & Steel .. .. .. .. .. .. .. | 1,470 |
| J. Hollingworth.. .. .. .. .. .. .. | 1,445 |
| W. Akers & Co... .. .. .. .. .. .. | 1,389 |
| Foster Brothers* .. .. .. .. .. .. | 1,363 |

* Accepted.

**Great Wralling, Suffolk.**—For the erection of four cottages, for the Hon. W. F. D. Smith, M.P. Mr. C. P. Ayres, architect, Watford:—

| | |
|---|---|
| Wiles & Son, Haverhill | £1,066 |
| Dupont & Co., Colchester | 997 |
| Grimwood & Sons, Sudbury | 957 |
| W. G. Jarvis, Clare | 950 |
| Mason & Son,* Haverhill | 880 |

* Accepted.

**Hessle.**—For alterations and additions to the "Granby" hotel, Hessle, for Mrs. M. Saunders. Messrs. Ansdell & Cox, architects, 50, Savile Street, Hull:—

| | | |
|---|---|---|
| H. Neal, Hull | £986 | 10 |
| G. Houlton, Hull | 975 | 0 |
| C. Barron, Hessle | 940 | 0 |
| F. Hall, Hull | 900 | 0 |
| W. Barton, Thorne | 889 | 0 |
| W. Parkinson, Hessle | 881 | 7 |
| T. Goates, Hull | 865 | 0 |
| J. Taylor & Son | 860 | 12 |
| J. R. Woods | 820 | 0 |
| I. H. Fenwick* | 797 | 0 |

* Accepted.

**Tonbridge (Kent).**—For constructing new surface-watersewers, for the Urban District Council. Mr. W. Laurence Bradley, C.E., engineer:—

| | |
|---|---|
| Strange & Sons, Tunbridge Wells | £3,736 |
| K. C. Jarvis | 2,850 |
| Dixon & Co., Bradford | 2,708 |
| Punnett & Sons | 2,487 |
| Martin & Co. | 2,397 |
| Arnold & Sons | 2,310 |
| W. Iles, Southend | 2,220 |

[Engineer's estimate, £2.218.] [Rest of Tonbridge.]

**Watford.**—For additions to the Isolation Hospital, for the Watford Joint Hospital Board. Mr. C. P. Ayres, architect, Watford:—

| | |
|---|---|
| W. Parmenter, Braintree | £9,150 |
| Kellet & Sons, Ltd., Willesden | 8,865 |
| W. J. Bloxham, Banbury | 8,627 |
| Appleby & Sons, Lambeth | 8,565 |
| R. L. Tonge, Watford | 8,327 |
| J. Ferguson, Holborn | 8,162 |
| Clifford & Gough, Watford | 7,999 |
| H. B. Watkins, Watford | 7.968 |
| Johnson & Son, Leicester | 7,899 |
| H. Martin, Northampton | 7,887 |
| G. & J. Waterman, Watford | 7,849 |
| G. Wiggs, Watford | 7,800 |
| H. Brown, Watford | 7,793 |
| Kerridge & Shaw, Cambridge | 7,777 |
| J. Darvill, Watford | 7,695 |
| Webster & Cannon, Aylesbury | 7,689 |
| C. Brightman, Watford | 7,440 |
| Clark Brothers,* Watford | 7,310 |

* Accepted.

# Coming Events.

**Wednesday, October 21.**

SANITARY INSTITUTE (Lectures and Demonstrations for Sanitary Officers, Part I.).—Inspection and Demonstration at a Bakehouse.

ARCHITECTURAL ASSOCIATION (Discussion Section).—Meeting at 7.30 p.m.

**Thursday, October 22.**

CARPENTERS' COMPANY (Lectures on Sanitary Building Construction).—Mr. H. Phillips Fletcher on "Properties and Qualities of Building Materials, and how to use them. Timber Decay and Preservation," at 7.30 p.m.

SOCIETY OF ARCHITECTS.—Annual General Meeting. Election of Officers and Council for ensuing Session, at 8 p.m.

SANITARY INSTITUTE (Lectures and Demonstrations for Sanitary Offices, Part I.).—Prof. R. Elsey Smith on "Building Materials," at 7 p.m.

**Friday, October 23.**

SANITARY INSTITUTE (Lectures and Demonstrations for Sanitary Officers, Part I.).—Prof. R. Elsey Smith on "Sanitary Building Construction and Planning: Soil and Local Physical Conditions," at 7 p m.

GLASGOW TECHNICAL COLLEGE ARCHITECTURAL CRAFTSMEN'S SOCIETY.—Mr. A. H. Morton and Mr. G. H. Gibson on "Reinforced Concrete," at 8 p m.

JUNIOR INSTITUTION OF ENGINEERS.—Annual General Meeting at Westminster Palace Hall, at 8 p.m.

**Saturday, October 24.**

SANITARY INSTITUTE (Lectures and Demonstrations for Sanitary Officers, Part I.).—Inspection and Demonstration at Charing Cross Hospital New Buildings at 3 p.m., conducted by Mr. A. Saxon Snell.

ST. BARTHOLOMEW THE GREAT, WEST SMITHFIELD.—Lecture on "History and Architecture of this Church." at 3 p.m.

GLASGOW TECHNICAL COLLEGE ARCHITECTURAL CRAFTSMEN'S SOCIETY.—Visit to ' Partick Pumping Station," at 3 p m.

**Monday, October 26.**

SANITARY INSTITUTE (Lectures and Demonstrations for Sanitary Officers, Part I.).—Prof. R. Elsey Smith on "Ventilation, Warming and Lighting," at 7 p.m.

**Wednesday, October 28.**

ARCHITECTURAL ASSOCIATION.—Conversazione at the Royal Institute of Painters in Water Colours, Piccadilly, at 8 p.m.

AUCTIONEERS' INSTITUTE OF THE UNITED KINGDOM.—Opening of Winter Session and inaugural Address by the President, at Hamilton House, Victoria Embankment, at 7.45 p.m.

SANITARY INSTITUTE (Lectures and Demonstrations for Sanitary Officers, Part I.).—Mr. W. H. Maxwell on "Sanitary Appliances." Inspection and Demonstration of Canal Boats arranged by Reginald Dudfield, at 7 p.m.

**Thursday, October 29.**

CARPENTERS' COMPANY (Lectures on Sanitary Building Construction).—Mr. H. D. Searles-Wood on "Site, Foundations and Sanitary Requirements of a Building," at 7.30 p.m.

# Builders' Notes.

**The Abram Cottage Hospital, near Wigan,** is being warmed and ventilated by means of Shorland's patent Manchester grates, supplied by Messrs. E. H. Shorland & Brother, of Manchester.

**Sites on the Holborn-Strand Street.**—The leases of several plots of building land in Aldwych and Kingsway were offered for sale at the Mart, Tokenhouse Yard, last week, but did not find purchasers, in consequence apparently of the conditions attached by the London County Council to the sale. The lease is in each instance for the term of eighty years, and there are stringent covenants as to building. The first lot adjoins the new buildings at the eastern corner of Aldwych. It is a plot of 10,500 sq. ft., with a frontage to the new thoroughfare of 117ft. The lessee is required to expend £20,000 in building in accordance with the Council's conditions. There was no bid for this lot, nor was there any offer for the adjoining one—a plot with an 88ft. frontage and an area of 9,550ft., on which the purchaser would be bound to spend £18,000 in building. Two lots in Kingsway also failed to attract a bid. One of these is near the northern corner of Great Queen Street, and has an area of 13,280ft. The other contains 2,425ft., and is on the opposite side of Kingsway. An island plot on the east side of Southampton Row, containing an area of about 2,545ft., with frontages on Eagle Street, Fisher Street and Kingsgate Street, attracted some spirited bidding, and was knocked down at a yearly rent of £620.

**Vauxhall Bridge.**—For the superstructure of Vauxhall Bridge the Bridges Committee of the L.C.C. recommend the acceptance of the tender of Messrs. Heenan & Froude, for £154,584. This was not the lowest tender; there were six tenders below it (of which three were from one firm, two being for foreign steel and one for British steel), and five were above it. A German firm tendered for steelwork only. The Committee remark that Messrs. Heenan & Froude propose to carry out all the work themselves. The expenditure sanctioned by the Council for the superstructure is £192,960, of which £22,690 is the estimated cost of ornamentation.

**Painting Public Buildings.**—The Association of Master Plasterers and Painters of Manchester and Salford have issued a communication to the members of the local municipal bodies as to the direct employment of labour in the painting and decorating of public buildings. As large employers of labour, employing operative painters the whole year round, in slack times at considerable loss to themselves, the members of the Association feel that the withdrawal of public work and the employment of the men direct is a serious loss to them as a body, against which they have the right to protest. Further, they submit that this is not a monetary gain to the municipal authorities, but rather that the cost is materially increased by the method, and the work not so well done.

**The Laundry at Hunslet new Workhouse,** opened recently, forms a separate block, and has been fitted with steam-power machinery in the most up-to-date manner by Messrs. W. Summerscales & Sons, Ltd., of Keighley. It comprises receiving-room, washhouse for general work, a separate washhouse for dealing with foul linen, and a range of drying horses, with flannel and blanket drying-room over, heated on the hot-blast system, which not only does its work very quickly, but gives a result practically equal to out-of-door drying, and maintains its efficiency in all conditions of weather. The ironing- and finishing-room is fitted with the most modern machinery. After passing through this department the work is taken to the delivery room to be sorted ready for distribution to the various blocks.

Guaranteed Gearing

ROBERT ADAMS,
65 & 67, Newington Causeway, LONDON, S.E.

The Originator and Leading Maker of the Modern System of Ventilating Gearing.

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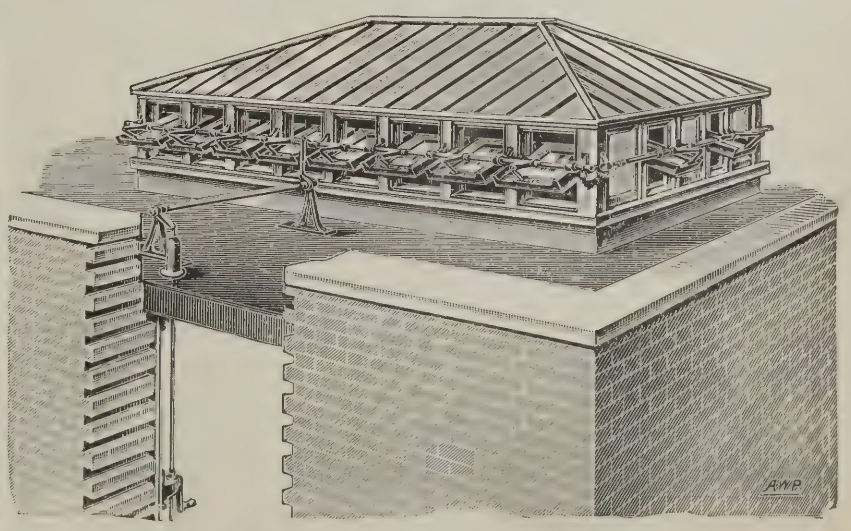
"ADAMS' SPECIAL CONTINUOUS GEARING"
used in most of the best known Public Buildings in the United Kingdom.

ILLUSTRATED PRICE LISTS ON APPLICATION.
FIFTEEN GOLD MEDALS AWARDED.

This Illustration shows the Gearing fixed outside, the Controlling Handle being within the Room.



**Advertisement Aphorism for the Week.**

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*You can't go wrong if you keep at it in the* BUILDERS' JOURNAL.

## Appointments Wanted.

*The charge for Advertisements under this heading is 1s. 6d. per insertion not exceeding four lines, and 6d. per line afterward, prepaid. Three insertions may be had for the price of two. Advertisements must reach the Office not later than 5 o'clock on Monday.*

ABLE ARCHITECTURAL ASSISTANT Disengaged shortly. Six years' general experience, surveys, working drawings from sketches, &c. Moderate salary. Excellent references.—H. DUDGEON, 163, Hinckley Road, Leicester.

ARCHITECT'S AND SURVEYOR'S ASSISTANT (22) desires change. Six years' London experience, four years in well-known office. Hospital and general work, working drawings, details, quantities, surveying. Moderate terms. London preferred. —H. J. B., 28, Weston Park, Crouch End, N.

ARCHITECT'S and SURVEYOR'S ASSISTANT (22) desires ENGAGEMENT. 6 years' experience. Working drawings, details, good knowledge quantities, surveying. Moderate salary. Good references. —Box 2603, BUILDERS' JOURNAL Office, 9, East Harding Street, Fetter Lane, E.C.

ARCHITECT'S DRAUGHTSMAN of wide experience in Paris wishes to hear of a good situation in London.—PESSAUD, 55, Ebury Street, Eaton Square, S.W.

ARCHITECT'S ASSISTANT of 7 years' experience, with good references, desires engagement in good office. Salary 35s.—ARCHITECT, 43, Upper Gloucester Place, N.W.

ARCHITECTURAL ASSISTANT desires SITUATION. 14 years' all-round experience. Working drawings, details, specifications, also hospital and asylum work. Good references.—C. T., 80, Mordaunt Road, Harlesden, N.W.

ARCHITECTURAL ASSISTANT, with 7 years' experience, desires engagement. Contract and detail drawings, construction and supervision of works. Moderate salary. Good references.—D. A. FORSTER, Fernlands, Chertsey, Surrey.

AS CLERK OF WORKS. Long varied experience in the trade. Structural Steel Work, Concrete, Brick, and Stone. Used to large works. Good testimonials, &c.—Box 2549, BUILDERS' JOURNAL Office, 9, East Harding Street, Fetter Lane, E.C.

AS TIMEKEEPER, Watchman, Messenger. Situation wanted by tall man, excellent character, good scholar. Could take up work at once.—E. TAYLOR, 123a, Church Street, Edgware Road, W.

BRICKWORK or POINTING WANTED by competent man. Any quantity. at most reasonable prices.—Apply W. S., Burlington Place, Woodford Wells, Essex.

BUILDER'S CLERK (25) desires SITUATION. 9 years' experience. Prime cost, measure up, good draughtsman, quantities, take off small works, assist estimating, adjust accounts, general routine.—Box 2602, BUILDERS' JOURNAL Office, 9, East Harding Street, Fetter Lane, E.C.

BUILDERS' GENERAL FOREMAN seeks Re-engagement. Trade, carpenter and joiner. Abstainer. London or Bristol preferred. Aged 36.—X. Y. Z., 62, Tubbs Road, Willesden Junction, London.

BUILDERS' GENERAL FOREMAN—thoroughly practical—seeks re-engagement. 20 years with West End firm. Trade, decorator. Age 52.—R. M., 25, Water Lane, Brixton Hill, S.W.

CARPENTER and JOINER'S IMPROVER wants JOB, bench or fixing. 5½ years' experience. Aged 21. Good references.—T. RIVERS, Greys Road, Henley.

CLERK OF WORKS DISENGAGED.—Just finished large job in London. Aged 46. Abstainer. Thorough knowledge of all branches. Excellent testimonials from architects of repute.—W., 2, Shanklin Villas, Burlington Lane, Chiswick.

CLERK OF WORKS seeks RE-ENGAGEMENT. Just finished large job in London. Thoroughly practical. First-class references. Age 45. Town or country.—Address B. L., 81, High Street, West Norwood.

GENERAL FOREMAN, practical, working, seeks job with Builder. Steady and reliable; competent to carry out all classes of work. Trade, carpenter and joiner.—H. HEMS, 7, Park Grove, Bromley, Kent.

GOOD MASON wants Job. Abstainer. Good draughtsman. Capable of setting out. References. — MASON, Stone Works, Frinton-on-Sea, Essex.

MACHINIST (young) wants job. Spindle, own cutters, planing machines, and saw bench, sharp saws. Would go as improver. Town or country. —H. WYNN, 18, Lausanne Road, Peckham, S.E.

PAPERHANGER (Practical), day or piece work, fill up time painting. Town or Country.—W. PETERS, 477, Woolwich Road, Charlton, S.E.

PLASTERER wants PIECEWORK. Labour only. Town or country. Good references. —T. S., 92, Seaford Road, Tottenham.

PLUMBER (Improver) wants Job, town or country; moderate wages for constant job. Good references.—L. COE, 4, Lamont Road, Chelsea, S.W.

PLUMBERS' Work, Sanitary, Leadwork, Gas and Hot-water Fitting wanted by practical Plumber. Distance no object; references supplied.—JEFFERSON, 13, Warrender Road, Islington, N.

SHOP FOREMAN, aged 44, active and energetic. Good references from last and present employer; 10 years and 5 years good West-End shop. Disengaged at a week's notice.— E. F., 41, Hithpool Street, Paddington.

SHOP or GENERAL FOREMAN seeks RE-ENGAGEMENT. Just completed several large shops in West End. Thoroughly practical, energetic, and reliable in all best class work. First-class refs. from best London firms.—G. WALKER, No. 10, Sunnyside Road, Ealing.

STAIRS and RAILS. — Re-engagement wanted by a thorough practical Man, by the hour or piecework. Good references.—J. DYER, 69, Bemerton Street, Copenhagen Street, N.

SURVEYOR'S TEMPORARY ASSISTANT disengaged. Abstracting, billing, making up accounts, etc. Terms moderate.—W. G. THOMPSON, 43, Sisters Avenue, Clapham Common, S.W.

TO BUILDERS and SPECULATORS.—Wanted PIECEWORK. Woodwork, joinery, carcassing, stairs.—REID, 91, Mill Hill Road, Acton, W.

TO LARGE EMPLOYERS OF LABOUR. THE NATIONAL ASSOCIATION for RESERVE SOLDIERS, 119, Victoria Street, S.W., tel. 367, Westminster, telegrams, "Employoos," London, supplies men of good character only, as Porters, Labourers, Caretakers, Carmen, Night Watchmen, Timekeepers, Carpenters, Masons, Bricklayers, Navvies, Handy Men, &c. Characters up to date. No fees.—Apply SECRETARY, as above.

TO QUANTITY SURVEYORS, WANTED by JUNIOR ASSISTANT, aged 20, Engagement. Quick draughtsman and writer. Can abstract, bill, &c. Is industrious, punctual, and reliable. Moderate salary required.—Apply Box 2616, c/o BUILDERS' JOURNAL Office, 9, East Harding Street, Fetter Lane, E.C.

WALKING or WORKING FOREMAN of PAINTERS seeks RE-ENGAGEMENT. Experienced manager. Accustomed to full control. Practical in artistic decorations. Good artist. Present situation 4 years.—State wages, "FOREMAN," 59a, Marlboro' Road, Bowes Park, N.

## Appointments Vacant.

*The charge for Advertisements under this heading is 1s. 6d. per insertion not exceeding four lines, and 6d. per line afterward, prepaid. Three insertions may be had for the price of two. Advertisements must reach the Office not later than 5 o'clock on Monday.*

GUILDFORD RURAL DISTRICT COUNCIL.
SEND AND RIPLEY DRAINAGE.
CLERK OF WORKS WANTED.

The Rural District Council of Guildford are prepared to receive applications from competent persons to undertake the duties of Clerk of the Works in connection with the works of sewerage and sewage disposal for the Village of Ripley in the Parish of Send and Ripley, in accordance with the plans, &c., prepared by Mr. JOHN ANSTEE, the Council's Engineer.

The person to be appointed must have had previous experience in the duties, and the salary to be paid will be after the rate of £3 a week.

A list of duties, with which the person appointed will be required to conform, can be obtained upon application to the Council's Engineer, at the offices of the Council, Commercial Road, Guildford.

Applications, stating age, and enclosing copies of not more than three testimonials of recent date, together with a statement of the drainage works for which the applicant has acted as Clerk of the Works, must reach me at the Council's Offices, not later than 10 o'clock a.m., on FRIDAY, the 23rd day of OCTOBER.

By Order,
W. S. V. CULLERNE,
Clerk to the Council.

District Council Offices,
Commercial Road, Guildford,
6th October 1903.

RUGBY URBAN DISTRICT COUNCIL.
STEAM ROAD ROLLER DRIVER.

The above Council require immediately an experienced and competent DRIVER for the steam road roller.

The person appointed will be required to make himself generally useful, and to work with the other men, when not employed in rolling.

Applications endorsed "Driver" and stating age, experience, and wages required, and accompanied by copies of three recent testimonials, to be sent to the undersigned on or before the 26th inst.

By order,
D. G. MACDONALD, Assoc M.Inst. C.E.,
Surveyor.

Rugby,
October 15th, 1903.

ARCHITECT'S ASSISTANT wanted. Good general draughtsman. Specifications. Knowledge of construction. Able to set up perspectives. State salary required.—Apply BAILLIE SCOTT, Fenlake Manor, Bedford.

ARCHITECT'S ASSISTANT wanted. Good general draughtsman, expert in detail.—Apply by letter, stating experience and salary required, to R. B. PRATT, Architect, County House, Elgin.

CAPABLE ARCHITECT'S ASSISTANT Required at once. Designs, complete working drawings, and details. Experience in quantities preferred.—GELDER AND KITCHEN, Hull.

WANTED—Thoroughly competent BOOKKEEPER capable of taking charge of the accounts, and used to the usual routine of a builder's office.—Apply, stating age, experience and salary required to JOHN MORGAN & SON, Builders and Contractors, 43 Monk Street, Aberdare.

## THE BUILDERS' JOURNAL.

### PREPAID ADVERTISEMENT FORM.

### 4 LINES for 1/6.

### THREE INSERTIONS for 3/-.

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**After 4 LINES, 6d. per LINE.**

Write your "Want" Advertisement on this form and send it to 9, East Harding Street, E.C., with Postal Order for 3/-.

**NOTE.—5 o'clock p.m. Monday is the latest time for receiving "Want" Advertisements. Office: 9, East Harding Street, Fetter Lane, E.C.**

THE
# BUILDERS' JOURNAL
AND ARCHITECTURAL RECORD.

October 28, 1903. Vol. 18, No. 455.

6, Great New Street, Fetter Lane, E.C.

## Summary.

The scheme of the Victoria Memorial, in front of Buckingham Palace, is being spoiled. The roadways, which were originally shown outside the semi-circular colonnade, have now been formed *inside;* with the result that all the quiet surroundings which the "Queen's Garden" would have afforded are entirely lost. (This page.)

We import about £22,000,000 worth of timber every year, more than half of which is pine and fir from Norway, Sweden and Russia. The most important is Scots pine, which comes into the home market under a puzzling variety of trade names. From the New World the chief coniferous timber we import is yellow pine. (Page 171.)

The Architects' Registration Bill has been carefully revised, and the Society of Architects will spare no effort to secure its passage. Mr. Walter Thomas, of Liverpool, is the new president of the Society. (Page 172.)

The new Vauxhall Bridge will have five steel arches, each with thirteen ribs, built on Cornish granite masonry piers and abutments (backed by 6 to 1 concrete). A tender of £142,942 for the steel superstructure has been accepted. (Page 172.)

The campanile of San Giorgio dei Greci, in Venice, is said to be in danger of falling. It is nearly 200ft. high, and is now more than 3ft. out of the perpendicular. (This page.)

The squaring and cubing of dimensions, and the drawing-up of agreements, are dealt with in a second article on builders' office work. (Page 174.)

An exhibition of dwelling-houses has been opened in Paris. The chief exhibits are six full-size houses constructed with various materials. One is built of asbestos bricks, which are said to be very satisfactory; their outside surface is like that of dressed stone. Asbestos "slates" are also exhibited, while a model is shown of a house made to revolve, so as to always present its front to the sun. (Page 168.)

In some old cottages at Midhurst, which are now being altered, there are large beams having numerous rows of small holes in them. Many guesses were made as to their origin and use, till it was explained that they were relics of the old Wooden Walls of England. (Page 177.)

A third article on scientific masonry deals with the setting-out of an elliptical arch by the aid of sliding trammels: also the drawing of entases of columns. (Page 178.)

Prof. Capper, the new professor of architecture at Owens College, Manchester, began a course of four lectures last week on the work of the monastic orders in relation to architecture. He made reference to Westminster Abbey, quoting Kipling—"Standing in the darkness in that Abbey, you can feel the wings of the dead centuries circling about your head." He also referred to the ruins of Yorkshire, wonderful in number and beauty, and said these bore witness to the savage fury of William the Conqueror. (Page 169.)

**Spoiling the Victoria Memorial.**

We cannot suppose for a moment that the alteration in the scheme for the National Memorial to Queen Victoria now being carried out in front of Buckingham Palace has been made by Mr. Aston Webb on his own initiative: rather we think royal desires have had to be complied with. But whatever the reason, and whoever may be responsible, it is not too much to say that the scheme has been spoiled. One of the chief features of Mr. Webb's original design was the formation of a quiet enclosure called the "Queen's Garden," 800ft. by 450ft., wherein one could contemplate the memorial and indulge in those great sentiments which it embodies. The idea of this garden was eminently in keeping with the idea of the memorial, a sort of revered space apart from the whirl of traffic around it. The space, it will be remembered, was enclosed by a semi-circular colonnade, outside which were roads converging from Buckingham Palace Road and Constitution Hill on to the main "processional avenue" which will be formed straight through the Mall into Charing Cross. See what is actually being done. The semi-circular colonnade has been thrown still further out, the memorial has been brought into the centre of the enclosed space, the roads have been formed *inside* this space, circling round about the memorial, and "gardens" have been hemmed in against the colonnade on each side. The result is that all sense of quiet is destroyed. In the garden spaces at each side one will be cut off from the memorial first by a railing, then by the road, and then by a further railing which will presumably encircle the memorial. Just think of having to hurry across 60ft. of roadway, in fear lest one should find a cab-horse looking over one's shoulder or a motor-car bearing down like a palpitating death-engine; and then, arrived safely after all on the 8ft. walk, having to peer at the memorial over the railing! It would not have been a great deal farther for the traffic to go around outside the colonnade from Buckingham Palace Road to Constitution Hill, or vice versa, and even if this were held to be undesirable there is still the option of taking a roadway behind the memorial—even that would have left the "Queen's Garden" a very different place to what it will now be. The alteration has not been made for reasons of economy, for no economy is effected: nevertheless it spoils the whole scheme.

**Notice of Removal.**—We have now removed from the temporary offices at 9, East Harding Street to the new offices which have been prepared for us at *6, Great New Street, Fetter Lane, E.C.*

**Another Campanile in Danger.**

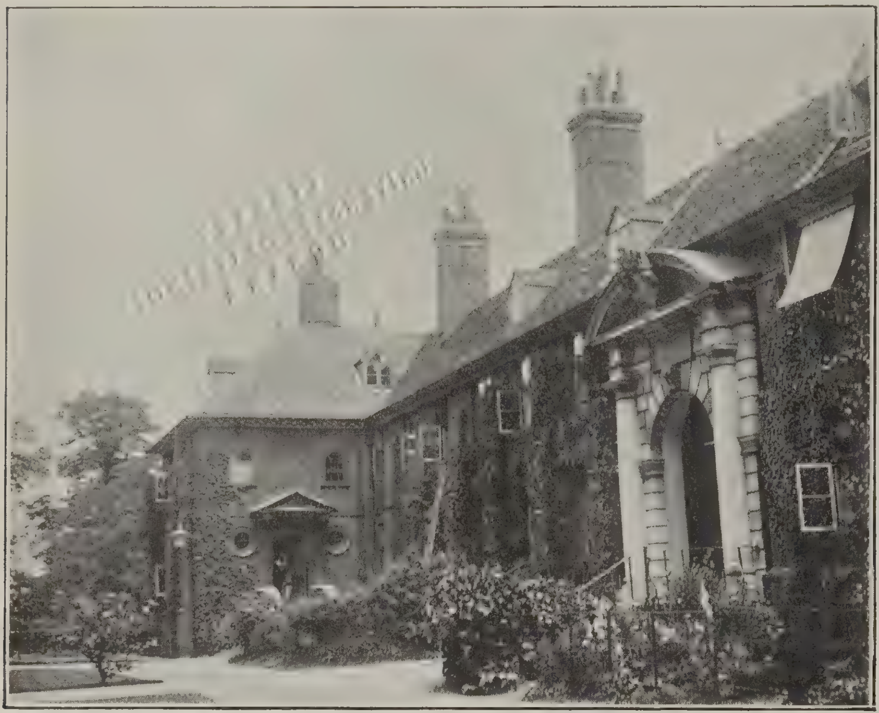
On the authority of Signor Vendrasco, a well-known Venetian engineer, it is stated that the tower of San Giorgio dei Greci is in danger of falling. This fine campanile, which is nearly 200ft. in height, is more than 400 years old. Signor Vendrasco says that the inclination of the tower, which was observed to be about 18in. so long ago as 1889, has been slowly increasing, until now it is more than 3ft. out of the perpendicular. In his opinion the campanile must soon succumb unless measures to restore it are instantly taken. It would naturally fall into the Canal of San Paolo. One of the great stones of the portico of Octavia fell last Thursday in consequence of a storm.

**An Open-Air Office.**

It is a great curse of city life that compels so many of us to work in offices, but the conditions being what they are, we are bound to accept them. We would suggest, however, that it might be possible to devise rooms after the manner of a sanatorium, so far as providing abundance of fresh air. Perhaps rooms arranged one over the other in a tower might solve the problem, with windows on three sides which might be shut or open according to the direction of the wind. At present fresh air in an office means draughts; but there is no reason why it should be so. Fresh air should mean life.

**The late Mr. Horsley.**

Mr. John Callcott Horsley, R.A., who died last week at the age of eighty-seven years, although more notable as a painter, had some connection with architecture. In 1843 a prize competition for cartoons illustrating incidents in English history and suitable for the decoration of the new Houses of Parliament, was instituted by the Government. Mr. Horsley's design of "St. Augustine Preaching" gained one of the three prizes in the second rank of £200. He afterwards in 1844 obtained, by his two small frescoes, a place among the six painters commissioned to execute further decorations for the Palace at Westminster. Mr. Horsley's design for "Religion" was approved, and he painted it in fresco for the House of Lords. In 1847 his colossal oil-painting "Henry V. believing the King dead assumes the Crown" obtained a premium of the third class. He also executed for the new palace a fresco depicting "Satan surprised at the Ear of Eve." Mr. Horsley was elected an Associate of the Royal Academy in 1855, becoming an Academician in 1866, and was elected Treasurer of the Academy in 1882. He was the father of Mr. Gerald C. Horsley, the well-known architect.



BROMLEY COLLEGE: LEFT WING.

# BROMLEY COLLEGE.

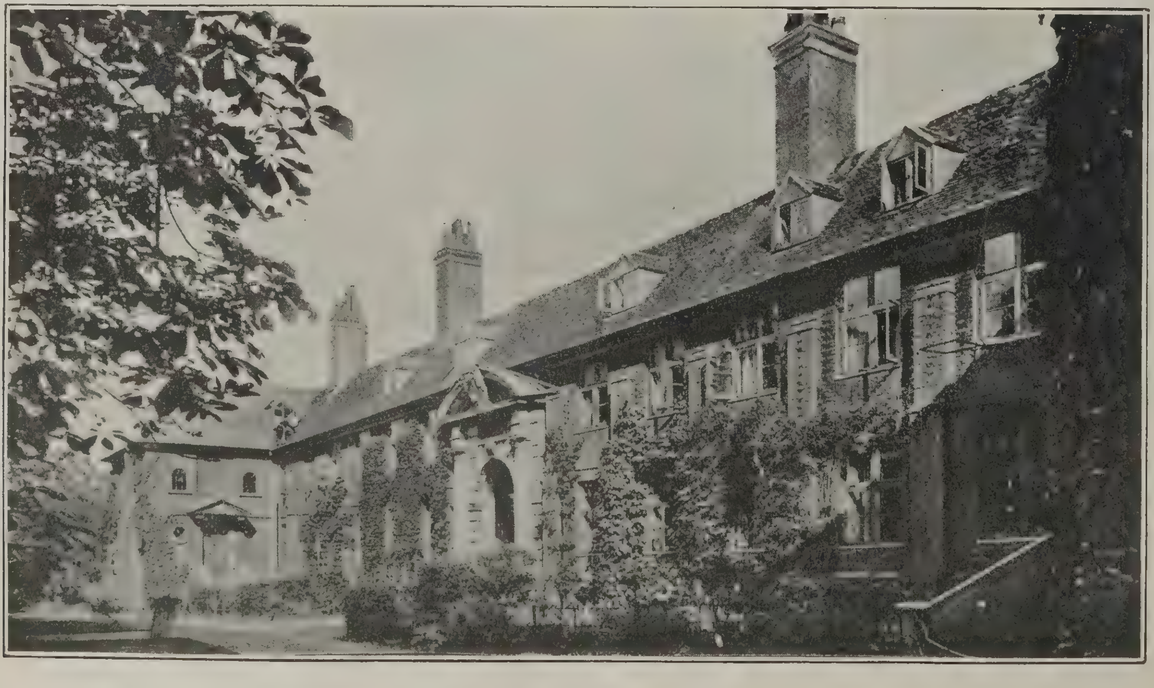
### By L. KENNETT WRIGHT.

JUST off the main road to London as it passes through Bromley is Bromley College, a fine Renaissance building. It is not a college in the true sense, being a home for the widows of clergymen of the Church of England. It was founded by Dr. John Warner, Bishop of Rochester, who in 1666 bequeathed £8,500 for the building of a "hospital for the reception of twenty poore widowes." He also charged his manor of Swayton to pay annually £450, which was distributed in shares of £20 each among the inmates, and the remaining £50 to a chaplain for the college. Further bequests by Mrs. Helen Beltinrous of £10,000 in 1788, and of £12,000 by William Pearce in 1782, enabled ten more houses to be built.

Bromley College is the largest and oldest institution of its kind in England.

The building was commenced in 1670, and it is said that some of the bricks and the stone columns around the quadrangle were brought from the ruins of the Great Fire of London in 1666. The materials used in the buildings are red and blue bricks, which have weathered to a most beautiful rich tone. The building consists of two open quadrangles, around which runs a stone colonnade carrying a tiled roof, thus forming a covered way to the various houses. In the middle of the main front is a very fine doorway of noble proportions surmounted by the arms and mitre of Bishop Warner; in it also is a tablet setting forth the purpose of the college—"Deo et Ecclesiæ." "This college fore twenty poore widowes of orthodox and loyal clergymen and a chaplain was given by John Warner late Lord Bishop of Rochester 1666."

To the right and left of the doorway, forming two projecting wings, are the houses of the chaplain and treasurer; which, with the first quadrangle, constitute the original seventeenth-century building. In the first quadrangle opposite the main entrance is the more modern chapel, in Early Decorated style, which took the place of the old chapel. Opposite is the little clock-tower built over the main entrance. The building is very similar in style to Morden College, Blackheath, and it is thought there is some connection between the two as regards their designs. Morden College was designed by Sir Christopher Wren.



BROMLEY COLLEGE: MAIN FRONT.

# AN EXHIBITION OF DWELLING-HOUSES.

IN the Grand Palais des Champs Elysées, Paris, an exhibition of dwelling-houses has been opened. It has received official support. The chief exhibits are of six full-size houses built of different materials.

The house of the Société d'Epargne des Retraites "l'Etoile du Foyer," a philanthropic and provident institution, contains—in the basement a washhouse and cellar; on the ground floor a kitchen 10ft. 10in. by 10ft. 3in., dining-room 15ft. by 9ft. 10in. and w.c.; and on the first floor two bedrooms 11ft. 11in. by 10ft. 3in., and 15ft. 6in. by 14ft. 5in., with a dressing-room. The cost of the whole is quoted at £300 nett.

A workman's dwelling (£140) contains (all on the ground floor) a vestibule, a common room 10ft. 8in. by 9ft. 10in., with (outside these dimensions, and screened off if desired) a kitchen, scullery and baker's oven, besides two bedrooms 7ft. 8in. wide, one being 11ft. 5in. and the other 10ft. 11in. long. This house and that already described were designed by M. G. Lavirotte.

A maison de famille has been put up, to the design of MM. Umbdenstock and R. Bouvard, by the workmen's societies connected with the Chambre Consultative des Associations Ouvrières de France. It contains—on the ground floor a vestibule, kitchen and w.c. with separate entrance; and on the first floor an antechamber and dressing-room, with three bedrooms, one 8ft. 11in. by 12ft. 1in., one 7ft. 6in. by 7ft. 11in., and one 12ft. 3in. by 8ft. 11in.

The maison démontable, designed by M. Benouville, is constructed with double

BROMLEY COLLEGE: MAIN ENTRANCE.

walls, the space between them being utilized as cupboards. It consists of kitchen and common room on the ground floor, two bedrooms and bathroom on the first floor, and also three attics and a small loft. The price of each house, built in series of six, is £400.

A shooting-box is built in the style of M. Guimard, who designed the entrances to the stations of the Paris Metropolitan Railway.

A modern house, occupying a site of 9 sq. yds., designed by M. Charles Plumet, has been built by M. Parizy entirely of asbestos bricks, and contains—on the ground floor a large common room, with kitchen and conveniences; and on the first floor three bedrooms, with bathroom and w.c. The price (including bath and heater, with pipes) is £720. All the houses are fully furnished, ready for occupation; and, in the present case, the prices of the furniture for the three bedrooms are £28, £21 4s. and £12 8s.

### The Asbestos Bricks

of which the house is built are called "briques amiantines ou amiantolithes," which can now be made at a moderate cost owing to the large deposits of asbestos that have been found in Canada. They have the great advantage of being absolutely incombustible and unattackable by acids, while at the same time being bad conductors of sound, heat, cold and electricity. They are composed entirely of asbestos, lime and silica in strictly defined proportions; and the substances, intimately mixed by special machines, are compressed in the form of ordinary bricks by powerful presses. The bricks are afterwards subjected to the chemical action of high-pressure steam, by which means a double silicate of lime and magnesia is formed. These new building bricks, the structure of which is perfectly homogeneous, are said to be equal to the best clay bricks as regards resistance to crushing stress. They are easily cut with the trowel, and take mortar well, while the thickness of joint is reduced to a minimum owing to the perfectly regular form of the brick. The external appearance is that of dressed stone; and as the bricks can be coloured unalterably while in a plastic state, they lend themselves admirably to polychrome decoration. They are produced by MM. Féodor Boas et Cie., at Choisy-le-Roi, near Paris, the works (which may be visited by those interested in the subject) being capable of turning out 40,000 bricks daily.

### Asbestos Plaster.

The same firm holds a concession from the Compagnie Généralé Française d'Asbestic of Lyons for its application of asbestos to building. The asbestic, mixed in equal proportions with cement or hydraulic lime, is used for an outside coat, and mixed in the proportion of 2 to 1 of plaster-of-Paris for inside plastering, the only change in these operations being that the coat sets more quickly than usual; but it is necessary to mix the substances, dry, very intimately before the water is added. The advantages claimed are incombustibility (including the protection of rolled joists and iron floors from expansion and consequent lateral thrust), deadening of sound, absence of cracks and maintenance of temperature so as to preserve the inside warmth in winter and protect from outside heat in summer. One weight unit of asbestic covers the same surface as 1·354 of plaster; and the additional cost, as compared with ordinary plastering, is very slight, considering the advantages offered.

### Asbestos Slates.

A third application of asbestos to building is made by M. Coutillier, of Asnèires, who supplies several Government Departments, and was awarded a grand prix at the Hanoï Exhibition of last year. This application takes the form of a tissue, and also of "slates," as they are termed, or rigid plates of very hard surface, employed for roofing and also for outside coating or inside lining. In the first-named case it is stated that the durability is equal to that of zinc at one-third the cost; and the plates are also lighter, weighing about 4lb. to the sq. yd., while air, dust and snow are kept out better than by any other substance. The aspect of a roof or wall covered with these plates in lozenge or diamond form is decidedly pleasing; and being flexible, the plates lend themselves readily to covering an arched roof.

### Compressed Cork.

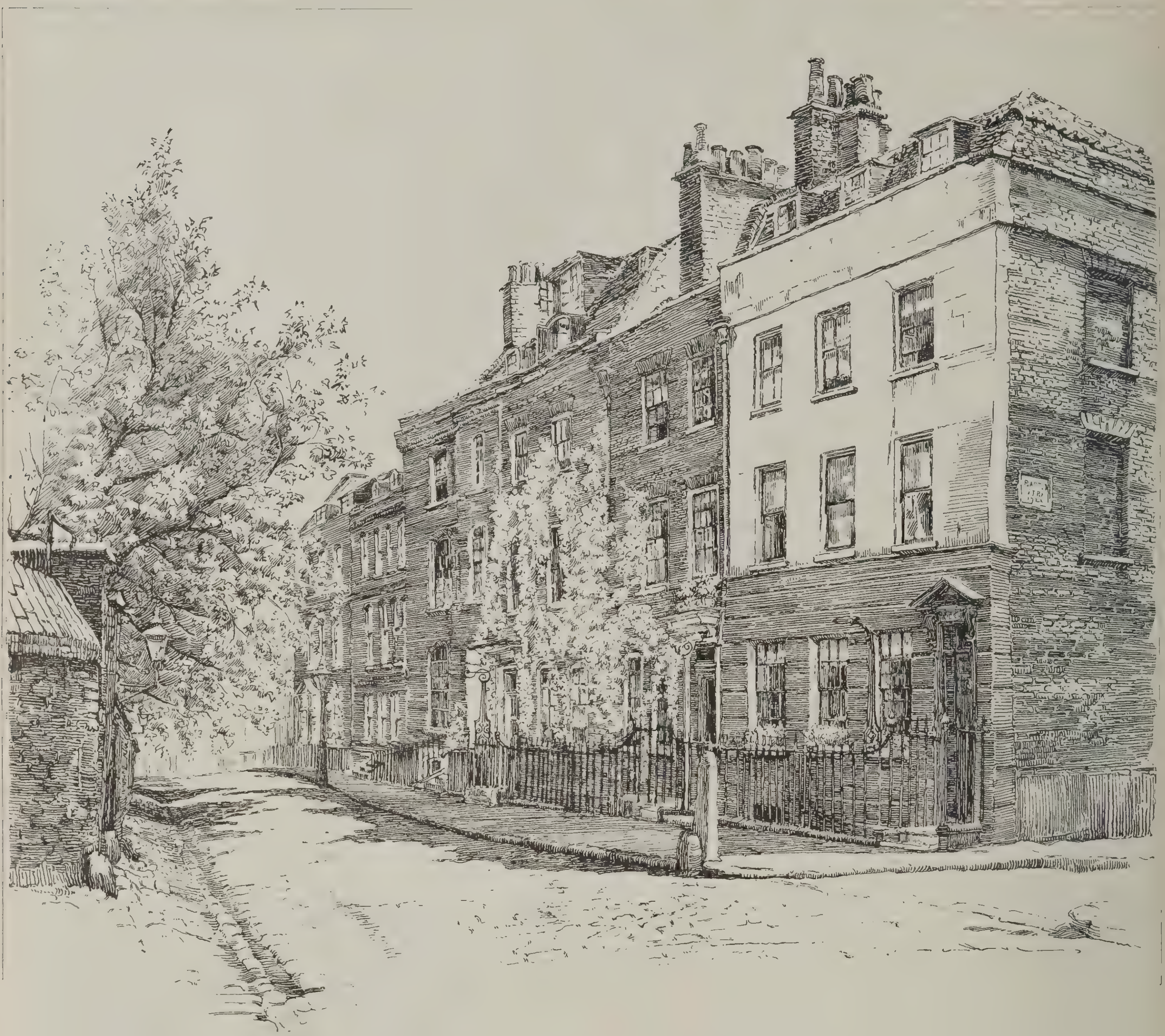
The use of compressed cork under the name of "lidium," for building purposes, is shown by a moderately-sized room constructed entirely of this substance, in which it is stated that no binding material whatever is used, so that the non-conducting property of cork is preserved in its entirety, while impermeability and non-flammability are given by chemical treatment. For lining structures formed of other materials, panels and flooring slabs are used, which latter may be laid direct, without a flooring of cement or timber.

A model (to 1·20 scale) represents the "Sunflower" house, which weighs 800 tons, and is made to revolve bodily by a force of 140 kilograms (308lbs.), so as to always present its front to the sun, in order to realize the physical law that it is the light absorbed by substances which exerts an action upon them, and that the chemical effect of light is in direct proportion to the quantity of light absorbed.

## PROFESSOR CAPPER'S LECTURES.

AT OWENS COLLEGE, MANCHESTER, last week Professor Capper (late professor of architecture in the M'Gill University, Montreal, and now appointed to a similar position at Manchester) began a course of four lectures on the work of the monastic orders in relation to architecture. He said the great monastic orders of the Middle Ages gave us at once a splendid page of European history, and perhaps the equally splendid page of architectural history. On the one hand, in Westminster Abbey we had history in architecture brought to the mind in a way which was quite incomparable. As Rudyard Kipling said: "Standing in the darkness in that Abbey, you can feel the

BROMLEY COLLEGE: THE CLOISTERS.



OLD WESTMINSTER: GREAT COLLEGE STREET, LOOKING EAST. DRAWN BY MISS A. S. ILLINGWORTH.

wings of the dead centuries circling about your head." On the other hand, in Yorkshire we could not but be struck by the wonderful number, and at the same time the beauty, of the ruins in that county—the crumbling but still exquisitely beautiful ruins in many cases of the homes of the monks who had passed away. On the western side of northern England there was no such shoal of ruins, no such tributes to past history. There was, of course, Furness Abbey, but, apart from that, Yorkshire could easily claim pre-eminence in monastic ruins. That again was a page of English history. Those ruins, so beautiful in their decay, bore witness to the savage fury of William the Conqueror and the horrors of the devastation with which he overwhelmed the north of England in his final crushing and successful attempt to establish his rule, and it was not till the succeeding century, when arose the abbeys which we now admired so much in their crumbling ruins, that that work of havoc was undone; that the land laid waste was once more brought back to fertility and tillage, and that the ruin and destruction of the Conqueror were in their turn replaced by the lowly, patient, steady and extremely successful work of the monks.

In his next lecture Professor Capper will deal with the Benedictines, and after that with the Cistercian monks.

## OLD WESTMINSTER.

SOME time ago we protested against the demolition of old Georgian houses in Great College Street, Westminster, and the action of the Ecclesiastical Commissioners which threatened to make an end of similar picturesque houses in the neighbourhood. Since then the pulling down of the houses in Great College Street has continued, and on part of the cleared site additional buildings for the Westminster School will be erected. The remaining portion, which in spite of strong opposition it was intended to vulgarize with offices and flats, has, with great difficulty and expense, happily been acquired by the Society of St. John the Evangelist (Oxford), and will be utilized for the purposes of a branch mission-house. A pencil drawing of six of the old houses was made just as they were being demolished, and we publish it in our centre plates this week as a record. In one of them, No. 25, Keats lived and wrote his famous letters to Fanny Brawne, while at the end of the row was Sutcliffe's famed tuck-shop. The centre of Great College Street, shown by the drawing reproduced above, is now barbarously threatened, two of the houses having been leased to a railway company; and we know what sort of buildings railway companies erect, even if there were not an example at the further corner! The doorway of No. 17, Great College Street (the house where Shelley lived), illustrated on the opposite page, is typical of Georgian work. In No. 16 the new Colonial Secretary lives. Readers may remember that our article attracted the attention of Members of Parliament, who subjected the action of the Ecclesiastical Commissioners' chief officials to very severe criticism, which was followed by a storm of indignation in the Press. The matter will be brought up again this next session, and we trust that it will result in a radical reform of this red-tape body.

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**St. Augustine's Parochial Hall, Brighton Road, Croydon.**—Mr. Frank Windsor, of Croydon, has been appointed architect to prepare plans, &c., for the erection of proposed new hall.

**Glasgow Technical College Craftsmen's Society.**—The second meeting of the session was held on Friday evening last. Mr. C. Ernest Monro, A.R.I.B.A., president, was in the chair. A paper on reinforced concrete by Messrs. Andrew Home Morton & George Henry Gibson, A.M., M.I.C.E., joint authors, was read. The principles of different firms' patent systems were discussed, and tables of strengths and comparative costs laid before the members. A hearty vote of thanks was accorded to the lecturers on the motion of Professor Gourlay.

# FOREIGN TIMBER.

### Some Particulars of the Pines we Import.

THE United Kingdom is the largest timber-importing country in the world, and our timber supplies are drawn from every quarter of the globe. Most of it is foreign pine and fir.

The value of our timber imports for the period 1895–99 amounted to an average of more than £22,000,000 per annum. For 1899 alone it was £25,500,000, and of this about £20,500,000 was for coniferous timber, hewn, sawn and manufactured, £11,750,000 worth of which came from Norway, Sweden and Russia, and nearly £2,000,000 worth from the rest of the European countries.

Canada and Newfoundland supplied us with over £4,500,000 worth, and the United States with over £2,000,000 worth, the remainder coming from various other parts of the world. In 1899, therefore, we paid to foreign countries not far short of £16,000,000 and to our colonies over £4,500,000 for coniferous timber; and of that paid to foreign countries more than three-fourths was for pine and fir timber, of which, says the "Scotsman," a large proportion could be profitably produced within the confines of our own shores.

Undoubtedly the most important coniferous timber we import is the Scots pine, or, as it is frequently called, Scotch fir, which comes into the home market under a puzzling variety of trade names. It is generally known as Baltic redwood, but it is also called Baltic red fir, red pine and red or yellow "deal." Its varieties are designated according to the locality from which they come, or to their port of shipment, as White Sea, Swedish, Danzig, Riga, St Petersburg, Gefle, &c., red or yellow deals, battens or boards, and these are graded into first, second, third and so on qualities, and are stamped or branded accordingly by the exporters.

The best qualities of redwood which we import are those which come from the Baltic and White Sea ports. The timber which comes from the regions about Danzig and Riga is the strongest and most durable, and is specially well adapted for structural work of all kinds, and for all purposes where exposure to weather, damp, &c., are factors which have to be taken into account. A fine quality of this kind of timber was formerly imported from Memel, but this supply has now almost ceased.

The redwoods shipped from the southern and eastern ports of the Baltic are the largest, hardest and most resinous of our imported Scots pine timbers; but the finest qualities of this timber for joinery are those imported from St. Petersburg and Archangel. These are drawn from the northern parts of Russia, chiefly from the White Sea region, and they are much finer in texture, and less resinous, than those of the south. A fine quality of this timber also comes from Sweden. This is grown on the eastern slopes of the Scandinavian highlands, and is shipped from the ports on the east coast of the country.

Next in importance to the Scots pine is the common or Norway spruce. This timber, like that of the Scots pine, is largely used in house-building and constructive work generally, and under the trade names of white-wood, white fir and white "deal" immense quantities of it are imported into Britain from the Baltic and Norwegian ports; and, besides the converted timber, great numbers of under-sized stems of this tree are imported for scaffold poles, pit-props and various other purposes.

The most important coniferous timber which we import from the New World is that known in the home trade as yellow pine. This is derived from the American white pine, a tree better known to planters in this country as Weymouth pine. The timber of this tree is called white pine in America, and of the coniferous timber which we import from Canada it forms by far the largest proportion. It is much used for internal finishing in house-building; and on account of its fine grain and close texture, its non-liability to warp and its large dimensions, it can be used for many purposes for which the Baltic timbers are quite unsuited. In fact, in general joinery and cabinet-making no other coniferous timber occupies so important a place.

The heaviest and strongest of the coniferous timbers we import is pitch pine, a timber very similar in character to some of the strong, hard resinous varieties of the Scots pine of some parts of Europe. It is mostly imported in the hewn state.

The least important of the pine timbers which we import from North America is the red pine, a tree which may be said to be the representative of the European Scots pine in the New World. In Canada it is called Norway pine, and it is the yellow pine of the Nova Scotians. It is not native to Europe, and the name Norway pine has no doubt been applied to it under a mistaken belief that it was the same species as that which occurs so plentifully in Norway. It is imported into Britain under the trade name of American or Canadian red pine, but the imports seem to be on the decline, and at present it finds its principal market in the western parts of the country.

The spruce timber which we import from North America is really the produce of two distinct species—the white or "single" spruce, and the black or "double" spruce; but the timbers of these two trees are not separated commercially, and both are imported under the trade name of American or Canadian spruce. These two species take the place in America which the Norway spruce does in Europe, and their timbers are imported for practically the same purposes as those for which Baltic white-wood is employed; but the market for American spruce, like that for American red pine, in confined chiefly to the western parts of the country.

Oregon pine, or, as it is sometimes called in the timber trade, Columbia redwood, is derived from a tree which is quite familiar to us in Britain. This is the Douglas fir, a tree which has been largely planted in this country, and which gives promise of becoming a valuable timber tree here. The timber of this tree is as yet imported in comparatively small quantities, but it bids fair to take the place of Baltic redwood for some purposes.

When the timber of the Californian redwood made its appearance in the home market some years ago it caused not a little sensation, but the hopes which were then held out of its becoming important commercially have not been realized. It is still imported, but only to a limited extent, and its use is practically restricted to internal finishing in high-class buildings, and to some kinds of cabinet-making. It is, however, a wood of great beauty, and planks of it can be procured of very large size.

NO. 17, GREAT COLLEGE STREET, WESTMINSTER (SHELLEY'S HOUSE).

## THE SOCIETY OF ARCHITECTS.

THE nineteenth annual general meeting of the Society of Architects was held on Thursday last at St. James's Hall, Piccadilly, W. The annual report of the Council stated that the all-important question of

**Architects' Registration**

had received fresh impetus during the year, and good progress had been made in preparing the way for further action. Early in the session the "Architects' Registration Bill Committee" was amalgamated with the council of the Society of Architects, as a joint "Registration Committee," under the chairmanship of the president of the Society for the time being.

"It has been ascertained that some two-thirds of the profession has declared itself in sympathy with the movement for obtaining the statutory examination and registration of all persons entering the profession of architecture; and from the fact that fewer than 170 voted against the principle, and as every possible facility was given for voting one way or the other, it may reasonably be inferred that an overwhelming majority of the profession is in favour of legislation on the lines indicated.

"The Society's circular received consideration by the Council of the R.I.B.A, which issued a counter-statement, followed by a request to the allied societies to express their opinions on the matter. Several of the latter have since passed resolutions in favour of the movement, thus confirming the individual voting of the members, which shows that almost without exception the allied societies agree with the principle of registration.

"The persistent action of the Society has naturally revived the antagonism of the few who, from the first, have strongly opposed any measure of the kind contemplated, and the usual paper controversy has resulted, but, on the other hand, many architects who hitherto have remained neutral, and some who formerly opposed, have thrown in their lot with the 'Registrationists.' . . .

"The Architects' Registration Bill has been carefully revised by the joint committee, and again introduced into Parliament, and no effort will be wanting on the part of its supporters to secure its passage.

"The Council feels that many of the difficulties inseparable from the movement are being successfully overcome, and that steady progress is being made towards attaining the object in view."

### New Offices.

The St. James's Hall property having been sold, it has become necessary to find other quarters for the Society. The Council is now in negotiation for premises in Holborn which are well suited to their purposes.

### Scale of Charges.

The Council has under consideration the drafting of a scale of charges and a form of contract for the exclusive use of the members, it having been represented that such would be of service.

### Examinations.

A large number of enquiries continues to be received for the half-yearly examinations, and the number of candidates is increasing. During the session, examinations were held in London and Leeds. Arrangements were also practically completed for a centre in Ireland, but these had to be postponed. The syllabus has been further revised and the regulations as to the admission of candidates made more stringent.

### Ancient Lights.

The question of further action by the Society in the way of Ancient Lights legislation is in abeyance pending the report of a committee upon the Bill drafted by the R.I.B.A. and the Surveyors' Institution.

The membership of the Society has continued to increase: it is now 614.

The following elections took place for the current session:—President, Mr. Walter Thomas, of Liverpool; vice-presidents, Messrs. G. Gard Pye and A. E. Pridmore (London); council, Messrs. F. W. Chancellor (Chelmsford), W. Cooper (Hastings), D. Morgan (Cardiff), R. F. Vallance (Mansfield), G. E. Bond (Rochester), C. Cole (Exeter), B. R. Tucker (London), J. W. Dyson (Newcastle-on-Tyne), J. C. Jackson (London), H. E. Knight (London), R. G. Bare (London) and F. W. Macey (London).

## THE NEW VAUXHALL BRIDGE.

A LARGE party of members of the Junior Institution of Engineers was recently shown over the Vauxhall New Bridge Works by Mr. W. C. Copperthwaite, M.I.C.E, bridges engineer, L.C.C. The cableway erected for removing the old bridge, and for building operations on the new, was demonstrated, an excellent bird's-eye view of the works being obtained from the suspended cage in which the visitors were conveyed across the river. The new bridge will replace the old bridge opened in the year 1816, which was the first iron bridge built across the Thames. It consisted of nine cast-iron arches, each of 78ft. span, with stone piers and abutments. The bridge was only 30ft. 6in. wide, and with the increase of traffic it proved too narrow, so that in 1895 the London County Council obtained an Act for its rebuilding. The new structure when finished will have five steel arches, built upon granite masonry piers and abutments. The centre span will be 149ft. wide in the clear, the two intermediate spans 140ft. 4in., and each of the shore spans 130ft. 6in. The work at present executed consists of the masonry of the piers and abutments of the new bridge built to a level of 9·75ft. above O.D. The foundations are of concrete, carried down, in the case of the abutments, to about 18ft. below O.D., and the piers about 30ft. The masonry is of white Cornish granite, laid in courses 2ft. deep, and backed by 6 to 1 concrete. The method of construction, after the old bridge had been removed, was to build dams, similar to the one now visible at the Westminster abutment, of 14in. by 14in. tongued and grooved piles. Around these dams protective dolphins were placed for the security of the river traffic. These dolphins are still in existence. The foundations of the piers are in clay. Considerable difficulty was experienced in the case of the Westminster abutment and with the pier supporting the central arch on the Westminster side. In the latter case, when the excavation of the foundation was nearly completed the dam burst, and very serious difficulty was experienced in repairing it. It is proposed to finish the work in the following manner: The abutments will be built of ornamental granite facing to the parapet level of the bridge, but the masonry of the piers will only be carried up to the springing of the arches. Above that level they will be finished in steelwork, the ends of the piers being decorated with ornamental cast-iron panels. The steel ribs will be thirteen in number in each arch, and the superstructure is so arranged that the parapet of ornamental wrought-iron projects over the outside ribs by means of cantilevers, which, it is hoped, will give a decorative appearance to the bridge. The Bridges Committee recommended the tender of Messrs. Heenan & Froude, Ltd., for the superstructure, amounting to £154,584, but last week the Council accepted that of Mr. Charles Wall, of Chelsea, amounting to £142,942. The design of the new bridge is by Mr. Maurice Fitzmaurice and Mr. W. E. Riley, respectively engineer and architect to the London County Council. It was illustrated in THE BUILDERS' JOURNAL for May 20th last.

## Builders' Notes.

**The South Canterbury Hospital, Timaru, New Zealand,** has been supplied by Messrs. E. H. Shorland & Brother, of Manchester, with their double-fronted patent Manchester stoves.

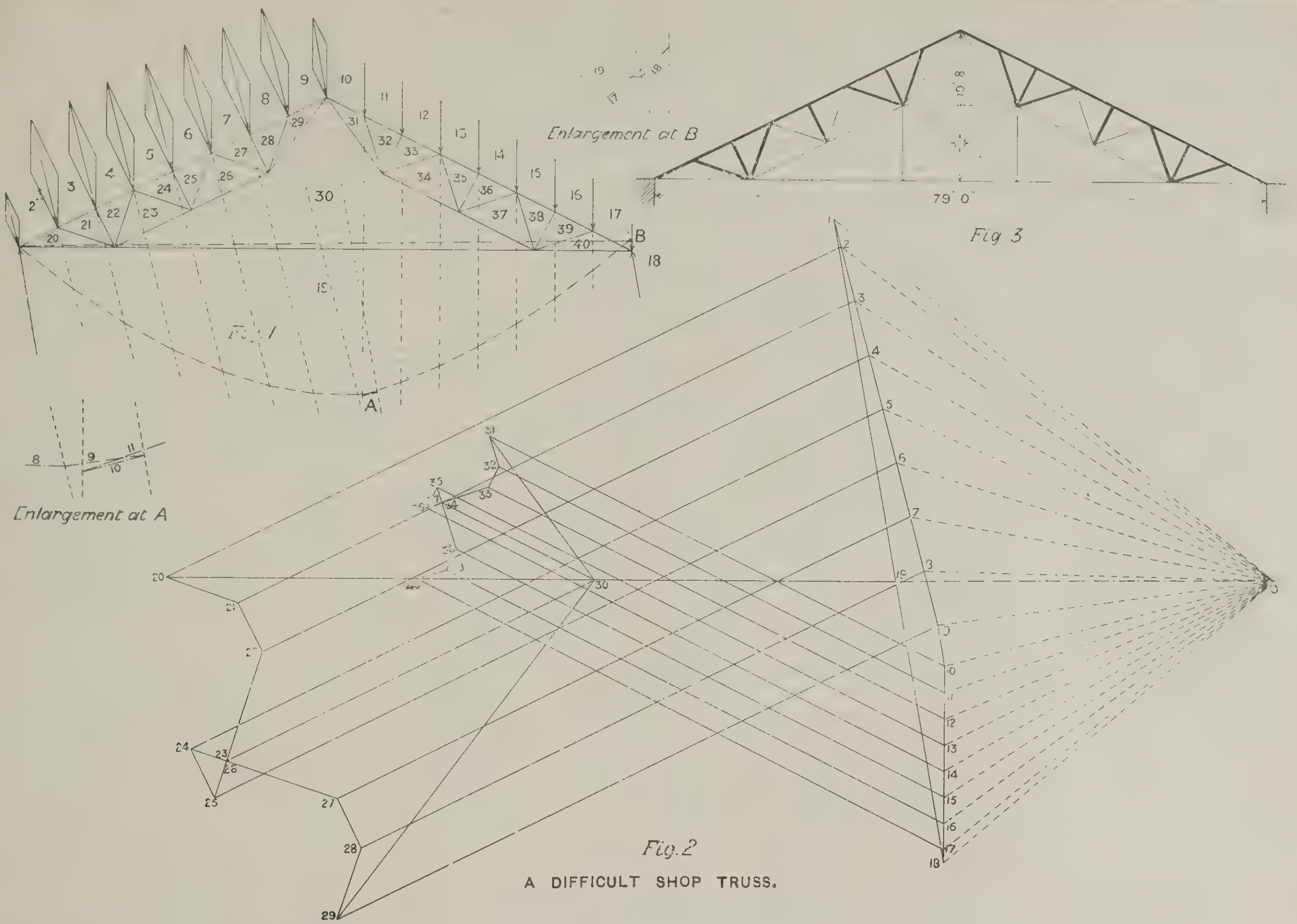
**The Welsh Congregational Church and School, Clifton Road, Birkenhead,** has recently been fitted with the latest improved "small tube" hot-water heating apparatus by Messrs John King, Ltd., engineers, Liverpool, who have employed their well-known economical coil heater.

**The Birkenhead and Wirral Building Trades Employers' Association** held its annual meeting recently, when the following officers were elected to serve during the current year:—President, Mr. Peter Rothwell; vice-presidents, Messrs. J. Merritt and William Male; hon. treasurer, Mr. Richard Allen; secretary, Mr. Arthur H. Edwardson.

**The Building Trade Dispute at Limerick** has now continued for seven weeks. The local Guild of Masons raised certain objections to the employment of men whom Messrs. Ryan, builders, had engaged outside Limerick at the new Post Office works, as the contractors were unable to find a sufficiency of hands in the town. The upshot of the matter was a lock-out of the Limerick masons, as well as labourers, and since then the works in question, as well as others which the firm have in hand, have been at a standstill. A number of men of the Belfast Bricklayers' Society, however, recently arrived at Limerick to commence work, and about forty labourers have been engaged.

**Queensland Timbers.**—The magnificent timber resources of Queensland are now being exploited, and the system of State Forestry in the colony carefully guards the indigenous timber trees from destruction or waste. "Ring barking," which in old days was regarded as part of the improvements under leases, can now only be carried out after inspection; fines from 1s. to 10s. per tree are imposed in cases of infringement of the condition that no trees suitable for saw-mill purposes are to be ring-barked. The following prices have been paid for the woods named:—Cedar 8s. 9d.; cedar (1,626,500ft.), 4s.; hardwood, 1s. 7d.; hoop pine, 2s. 2d. per 100ft. The Queensland Government is constantly creating reserves in order to preserve the valuable timbers from being cut down. In seventy-six reserves there are 706,975,000ft. super. of pine, valued at £176,743; in one district, Tarong, there are 240,000,000ft. of blackbutt, valued at £60, 000.

**A Practical Demonstration of Brickmaking** was given last Saturday week by Messrs. Jones Brothers, of the firm of Messrs. Jones & Maxwell, at Pelaw, to about thirty members of the Clerks of Works and Builders' Foremen's Association. Commencing with the getting of the shale, and its transmission to the grinding mills, a distance of 400yds., by an endless chain, with small waggons and a very light railway, the shale is next thoroughly ground to a powder by means of massive rollers, and passes through the perforated bottoms of the pans. From there it is passed by elevators to a mechanical sieve, which deposits all the finest material into another pan or mill to be ground again. In its turn it deposits the now finely ground shale into a mixer attached to a massive Bradley and Craven machine, which automatically makes and presses 1,200 bricks per hour. The bricks are again pressed in a powerful Facilts press, and are now sufficiently dense enough to be taken direct to the kilns. These are on the continuous Hoffman principle, and so constructed with a system of flues that the heat can be transmitted from one chamber to another, thus avoiding any waste of fuel. After being burnt the bricks are ready for use.



A DIFFICULT SHOP TRUSS.

# Enquiries Answered.

*The services of a large staff of experts are at the disposal of readers who require information on architectural, constructional or legal matters. Questions should in all cases be addressed to the Editor. The querist's name and address must always be given, not necessarily for publication.*

### Shop Roof-Truss.

Bootham.—L. C. H. writes: "Which is the best way to find the reactions at the abutments and the strains of the accompanying roof-truss?"

This is rather a difficult case to work out. It might be elucidated by means of substituted members, but the following method will be found suitable and easier:—Draw the frame diagram (Fig. 1), and add the force lines of the loads, compounding the wind and dead load into single lines. Number the external and internal spaces. Draw the load line (Fig. 2) from 1 to 18, and join these two points to obtain the direction of the reactions. Select pole 0, and draw vectors as shown by dotted lines. Produce the force lines in Fig. 1, and draw the funicular polygon as shown by stroke-and-dot line. This will want considerable care, and to make matters clearer enlargements of the junctions at A and B are given. When the funicular polygon is completed, the closing line gives the direction of line 0-19 in Fig. 2. Next, draw lines of indefinite length from 5 and 6 in Fig. 2 parallel with the corresponding lines of 5-24 and 6-25 of Fig. 1. Also draw lines of indefinite length from 13 and 14 in Fig. 2 parallel with the corresponding lines of 13-35 and 14-36 of Fig. 1. Central between these two sets of parallel lines fix point 30. It will be found that the reciprocal stress diagram (Fig. 2) may now be completed without difficulty, commencing 2-20, 19-20, then 3-21, 20-21, &c. Fig. 3 shows the nature of the stresses, the amount of which should be scaled off, Fig. 2 taking the maximum as applying to both sides. The main tie-rod is much too long to be left without support, which may be given by two vertical rods, as shown in Fig. 3; the other bars may be added for appearance, but they should be very light, as they have no work to do.

HENRY ADAMS.

### Mr. Gilbert Scott.

Rochdale.—W. E. C. writes: "What is the age of Mr. George Gilbert Scott, the appointed architect for Liverpool Cathedral?"

Mr. Scott is about twenty-four.

### Acanthus Scroll.

Sunderland.—W. T. writes: "Could you say from what building the acanthus scroll of which I send a tracing (not reproduced) is taken? Professor Roger Smith's book on architecture illustrates it, but does not give the name of the example, and I cannot find any information anywhere else."

The piece of ornament is taken from a fragment built into the wall over the gateway of the convent courtyard at Syriani. It belongs to the late Ionian period (say *circa* B.C. 320); but the building from which it was taken is not known for certain.

HUGH STANNUS.

### Aviaries.

Horley.—B. S. writes: "Where could I get full particulars of the construction and requirements for a pheasant aviary?"

If an aviary or pheasantry for only a few birds is required, a structure on the lines of a covered-in fowl run will suffice, it being presumed that the birds are to be kept in confinement. Some particulars may be gleaned from "Pheasant Keeping for Amateurs" (L. Upcott Gill, 55, Drury Lane, W.C., 3s. 6d.). I know of no book dealing with the raising of pheasants on the grand scale; but where large numbers are bred the pheasantry consists merely of a larger or smaller tract of rough land fenced in with wire-netting to a height of 10ft. or so, no buildings being erected, but "cover," if not existing naturally, being provided by means of brushwood.

H. E. [illegible]

### Thickness of Walls.

London, S.E.—T. G. R. writes: "In determining the thickness of walls for a building, how is the length arrived at? Referring to the accompanying sketch (not reproduced), is the length of the wall taken from A to J or from A to B, and B to C taken as a return wall, and so on?"

According to the London Building Act walls are deemed to be divided into distinct lengths by return walls, and the length of every wall is measured from the centre of one return wall to the centre of another. As nothing more is said as to method of measurement, we take it the distance is measured direct, *i.e.* from A to J; and considering also that bays are treated as specially allowed projections, this becomes the plain meaning.

### Disposal of Sewage from Four Small Houses.

Sleaford.—Tenax writes: "I wish to put a small settling tank or screening chamber at the bottom of a garden, as shown by the accompanying sketch (not reproduced), to intercept crude sewage entering the beck from the drainage of four small houses, each having a w.c. What kind of a screen would be best, and would this be a cheap and efficient means of purifying the sewage?"

The provision of an iron screen in the settling tank would not prevent crude sewage entering the stream, but would merely arrest the passage of solid matters. Such an arrangement would not purify the sewage in the slightest degree. Some simple scheme of bacterial purification should be adopted. Sketches and full particulars of an inexpensive method of this description will be found in The Builders' Journal for May 20th last. Amongst other similar systems which may be recommended are those designed by the Septic Tank Syndicate, Ltd., 7, Bedford Circus, Exeter, the Sewage Filtration Co., Ltd., 35, Waterloo Street, Birmingham, Adamsez, Ltd., Scotswood-on-Tyne, and W. E. Farrer, Star Works, Cambridge Street, Birmingham, from whom approximate estimates of cost may be obtained. If it is only desired to provide a screen for the interception of solids, it would be better to form it with wrought-iron bars, spaced from ¾in. to 1½in. apart (according to circumstances), as the small openings in a perforated iron plate would soon become choked. T. E. C.

### R.I.B.A. Examination Papers.

BOLTON.—NOCTE writes: "Are the R.I.B.A. Intermediate examination papers for the last ten years obtainable? I should also be glad to know of any buildings suitable to measure within thirty miles or so of Manchester."

The papers set in June are published each year in the R.I.B.A. Kalendar (price 2s. 6d.), and separately also (price 1s.). It would be best to write direct to the Secretary, R.I.B.A., 9, Conduit Street, Hanover Square, W., to ascertain whether any sets are out of print. Except what has appeared in our correspondence columns (see the issues for April 1st and April 8th last), there is nothing to add to what we said previously about buildings worth measuring in the district. Fresh old buildings do not grow in the course of a few months. M.

### Strength of Beam.

GREAT BOOKHAM.—YORK writes: "I should be glad to know if the following working of 'Down South's' query in your issue for October 14th is correct for safe distributed load:—

$W = \frac{CBD^2}{L}$ Transposing, $BD^2 = \frac{W \times L}{C}$ when $W$ = breaking weight in cwts., $C = 3\frac{1}{2}$ cwts., $B$ = breadth and $D$ = depth of beam, $L$ = feet in span.

$$D = \frac{3B}{2}.$$

$$BD^2 = \frac{9B^3}{4}.$$

$BD^2 = \frac{W \times L}{C} = \frac{100 \times 20}{1\frac{3}{4} = \frac{7}{4}} = \frac{100 \times 20 \times 4}{7} = \frac{8000}{7}$. But $BD^2 = \frac{9B^3}{4}$ $\therefore$ $\frac{9B^3}{4} = \frac{8000}{7}$ $\therefore$ $B^3 = \frac{8000 \times 4}{7 \times 9}$ $B^3 = \frac{3200}{63} = 508$ $\therefore$ $B = \sqrt[3]{508} = 8''$.

$$D = \frac{3B}{2}, \text{ but } B = 8''.$$

$$\therefore D = \frac{3 \times 8}{2} = \frac{24}{2} = 12''.$$

$$B = 8''.$$

$$D = 12''.$$

NOTE.—$C = 1\frac{3}{4}$ cwts. for safe distributed load."

$W = \frac{cbd^2}{L}$ is the ordinary formula for strength of beams, where $W$ = breaking weight in cwts. in centre, $c$ = constant = $3\frac{1}{2}$ for fir, $b$ = breadth in inches, $d$ = depth in inches. If the beam is to have the depth and breadth in the proportion of 3 to 2, then $d = \frac{3b}{2}$, or $W = \frac{3{\cdot}5 \times b \times (\frac{3}{2}b)^2}{L} = \frac{3{\cdot}5 \times \frac{9}{4} \times b^3}{L} = \frac{7{\cdot}875b^3}{L}$. But a beam will carry twice the load distributed that it will centrally, and for working load a factor of safety of 7 should be employed. Therefore if $W$ be safe load cwts. distributed, $W = \frac{7{\cdot}875b^3}{L} \times \frac{2}{7} = \frac{2{\cdot}25b^3}{L}$. By transposition $b = \sqrt[3]{\frac{WL}{2{\cdot}25}}$. Let $W$ = 100 cwts. and $L$ = 20ft., then $b = \sqrt[3]{\frac{100 \times 20}{2{\cdot}25}} = \sqrt[3]{889} = 9{\cdot}6$, $\frac{d}{b} = \frac{3}{2}$ $\therefore$ $d = 9{\cdot}6 \times \frac{3}{2} = 14{\cdot}4$ or the required beam = $14\frac{1}{2} \times 9\frac{1}{2}$in. HENRY ADAMS.

### Model Farm Buildings.

LONDON, E.C.—L. M. writes: "Can you tell me of any model farm buildings within thirty or forty miles of London that have been recently erected suitable for a farm (not a dairy) of about 200 acres?"

I cannot personally name any such buildings, but no doubt some one of the readers of this enquiry will be kind enough to give the information asked. I advise the purchase of Mr. Dudley Clarke's book on farm buildings, published by the "Hampshire Observer," Winchester, at (I believe) 6s. You will find a model plan on p. 36 such as you require. See also "Specification No. 4," pp. 24–31. F. S. I.

### New Buildings and Old: The Light Question.

GRANTHAM.—ENQUIRER writes: "A has a house adjoining the road which has been erected for fifteen years. On the opposite side of the road, which is only 25ft. wide, B builds a house about 40ft. high. Has A any power to prevent B proceeding with his building, which is blocking the light out of A's rooms?"

A period of twenty years' enjoyment is necessary under the "Prescription Act" (2 & 3 Will. IV., c. 71) before a right to access of light over another person's property can be acquired; practically this is shortened to a period of nineteen years and a day by the procedure necessary for a successful rebutment of such a claim (see "Specification No. 4," p. 65). Even if A's building were more than nineteen years old, the interference with A's light would need to be "substantial" before he could obtain redress from B (see "Fletcher on Compensations," p. 32). F. S. I.

## BUILDERS' OFFICE WORK.—II.

By W. H. C. E.

*(Continued from p. 122, No. 451.)*

THE younger members in a builder's office will be employed on the squaring and cubing of dimensions a good deal more than they probably care for. It is tedious work, yet almost daily necessary, and the tyro who essays to grapple with it by the methods taught at school will find he has an everlasting job on hand with multitudinous opportunities for error.

In the building and kindred trades a bastard system of duo-decimals is employed. In the decimal notation, as is well known, so also in the common notation, the value of figures increases from right to left by powers of 10; in the *true* duo-decimal notation the increase is by powers of 12. The figure representing the arbitrary limit of the scale of notation is termed the radix; thus 10 is the radix of the decimal scale and 12 that of the duo-decimal. As each digit of the scale must have a separate symbol, and as in the ordinary notation there is nothing over 9, arbitrary symbols to represent 10 and 11 will have to be made. This may be done by taking the initial letter of each word; thus the symbols on the duo-decimal scale will be 1, 2, 3, 4, 5, 6, 7, 8, 9, t, e. No symbol will of course be required for 12, because this will form 1 of the next higher power. Figures then in the ordinary scale will have to be differently rendered when expressed in the duo-decimal scale: thus 266ft. 8in. would, duo-decimally expressed, become 222ft. 8in. (divide 266 by 12, and add the remaining figure) and 299ft 2in. would become 24eft. 2in. As this would, to say the least of it, be highly inconvenient when for all ordinary purposes the symbols of the ordinary or decimal scale are universally employed, pure duo-decimals have to be shut out of the realm of practical builders' office work. But whilst the substance has to be dropped the shadow can still be usefully employed.

In lineal measure we have: 12 lines = 1in., 12in. = 1ft., &c.; in square measure 144 sq. in. = 1 sq. ft., &c.; and in cubic measure, 1,728 cub. in. = 1 cub. ft., &c.; and in ordinary scholastic arithmetic these measures have to be rigidly observed. But when we come to the squaring and cubing of dimensions by the duo-decimal notation (it is to be understood that hereinafter when the word "duo-decimals" is used the bastard system employed by the building trade is meant) these measures are neglected, at least for as far up the scale of dimensions as feet; and an inch—lineal, square or cubic—is accounted as the twelfth part of a foot, every power to the right being one-twelfth lower in value than that immediately to its left. As quantities on the decimal scale can be expressed down to any number of places of decimals, so in the duo-decimal scale we can express minute quantities to any number of places of dashes, feet being denominated by one dash and every power to the right having one dash additional, thus: 2′ 6″ 4‴ 8⁗ 5′′′′′, though a quantity beyond the third place is usually dealt with by dropping it if below 6 and counting it if above 5 as a whole number of the next higher power: thus, the figures just rendered would be shortened to 2′ 6″ 5‴, which would be accurate enough for anything, whilst as ultimate figures for ordinary building trade calculations even the third power is discarded, being dealt with by dropping or adding as just mentioned, the final figures being thus rendered: 2′ 6″ (2ft. 6in.).

According to scholastic methods a piece of wood measuring 23½in. by 11in. would contain 1 sq. ft. 114½ sq. in. $(23\frac{1}{2} \times 11 = 258\frac{1}{2} \div 144 = 1\,\frac{114\frac{1}{2}}{144})$; duo-decimally expressed, the measurements would be 1′ 11″ 6‴ × 11″, and the superficial measurement, usually designated *super.* for short (cubical measurements being designated *cube*), would be 1′ 9″ 6‴ 6⁗, or, expressed in common measure as just explained, 1′ 10″ (1ft. 10in.) super.

The working-out of cubical measurements is simply an elongation of the superficial arithmetic, and to elucidate the point an example is given:—Required the superficial measurement of a square room 14ft. 6in long and 11ft. 3in wide, also its cubical contents, the room being 9ft. 4½in. high.

First express these dimensions duo-decimally: 14′ 6″ × 11′ 3″ × 9′ 4″ 6‴; then, to get the area of the room, place the several measurement values of the multiplier (which may be either of the dimensions, usually the one lower in value) under the corresponding values of the multiplicand; then multiply each value of the latter separately (commencing at the lowest) by each value of the former (commencing at the highest), placing the figures of the answer immediately below those of the sum, provided the highest power of the multiplier is *feet*, and one place to the right for each lower denomination. Both in multiplying and in adding the several lines every complete 12 will be carried forward as 1 to the next higher denomination, thus—

14′ 6″ × 11′ 3″
11′ 3″
———
159′ 6″
3′ 7″ 6‴
———
163′ 1″ 6‴ super.

In order to arrive at the cubical contents the sum is continued:—

163′ 1″ 6‴ × 9′ 4″ 6‴
9′ 4″ 6‴
———
1468′ 1″ 6‴
54′ 4″ 6‴ 0⁗
6′ 9″ 6‴ 9⁗ 0′′′′′
———
1529′ 3″ 6‴ 9⁗ 0′′′′′ cube
= 1529ft. 4in. cube.

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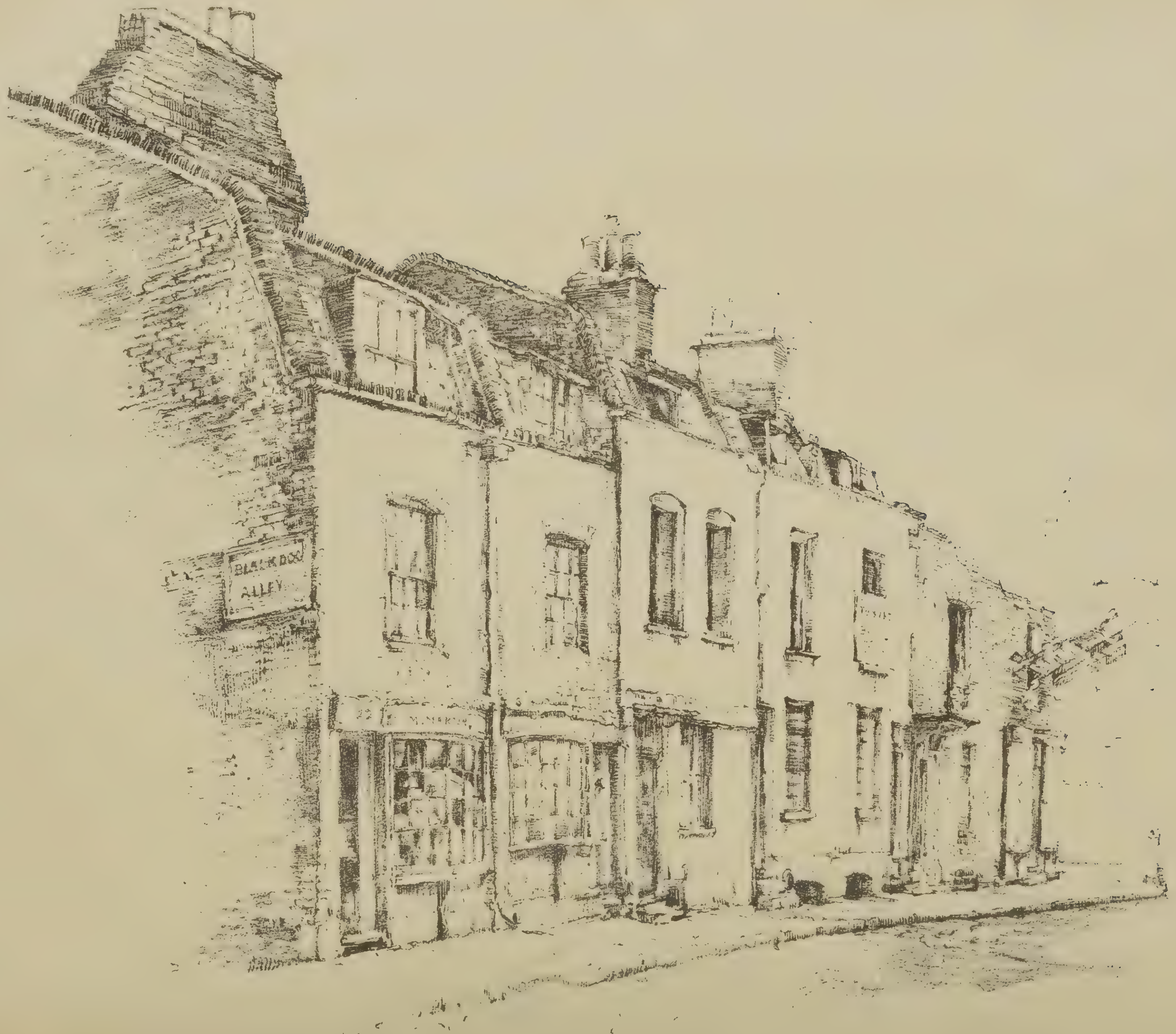
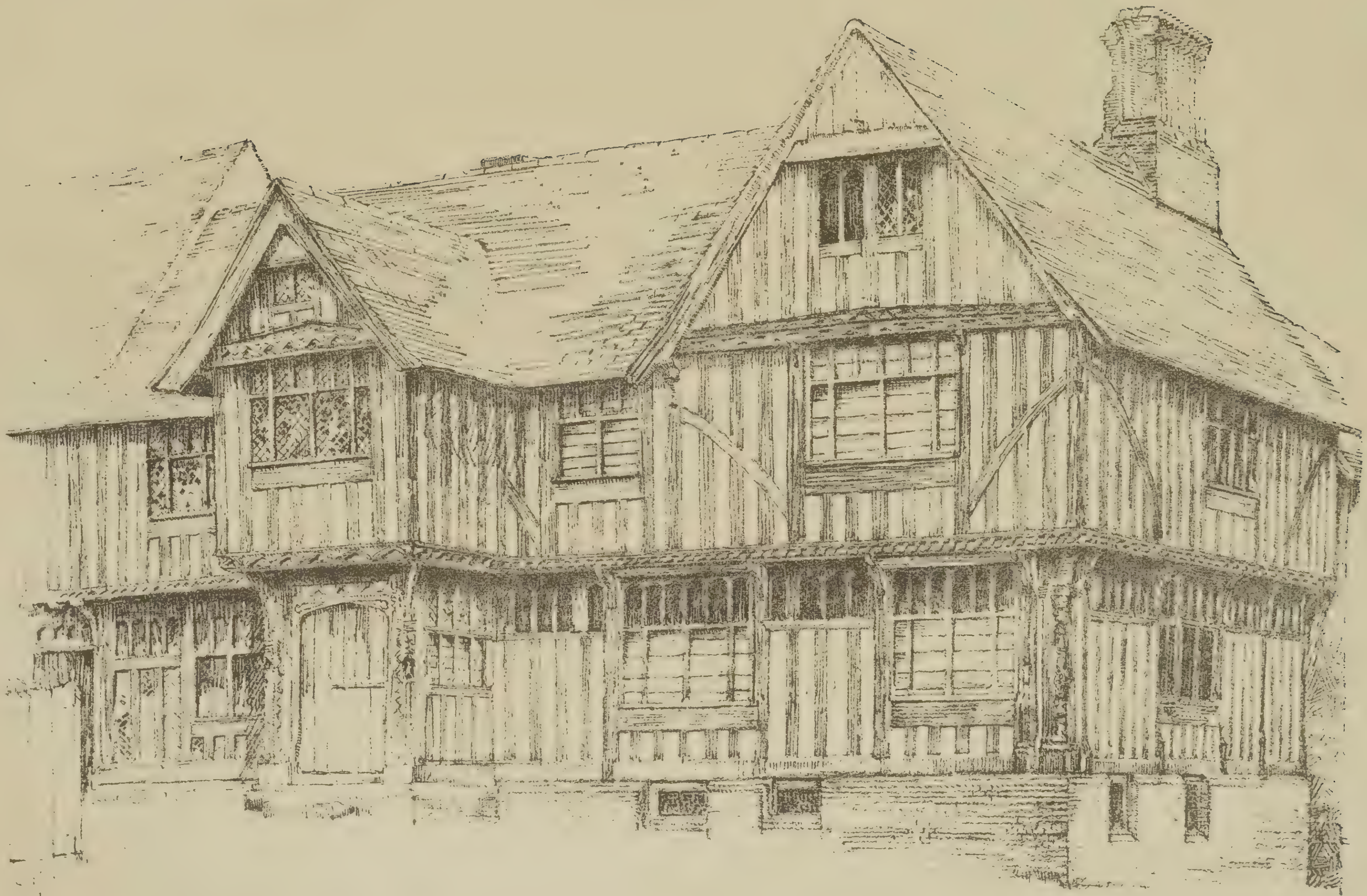
*Supplement to*
THE BUILDERS' JOURNAL AND ARCHITECTURAL RECORD,
*Wednesday, October 28th*, 1903.



"INK-PHOTO" R J EVERETT & SONS, 56 LUDGATE HILL, LONDON, E.C.

WEST END OF GREAT COLLEGE STREET RECENTLY DEMOLISHED. DRAWN BY MISS A. S. ILLINGWORTH.

*Supplement to*
THE BUILDERS' JOURNAL AND-ARCHITECTURAL RECORD,
*Wednesday, October 28th*, 1903.


Basil Oliver 1903.

The Old, Guildhall Lavenham.

"INK-PHOTO." R. J. EVERETT & SONS, 68 LUDGATE HILL, LONDON, E.C.

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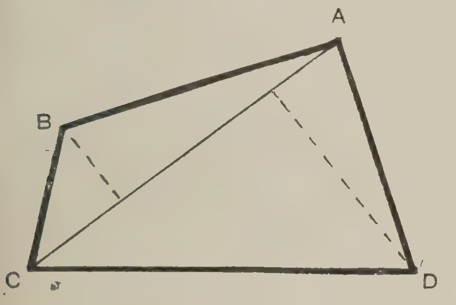
It must not, of course, be supposed that it will be necessary to work out every sum in detail as here shown. Extreme accuracy in any denomination below inches is seldom or never required in the building trade, yet the principle must be mastered before short cuts can be introduced. In ordinary arithmetic, eschewing duo-decimals, the "cube" would in this case be more quickly arrived at thus, fractions being to some extent disregarded :—

163·1½
9·4½
1468·1½
3″=¼ft., therefore divide multiplicand by 4 - - 40·9½
1½″=½ of 3, therefore divide last product by 2 - - 20·5
1529′4″ cube.

In the working-out of superficial measurements of confined or open spaces whose shape may be other than square or rectangular, it will be necessary first to plot the space accurately on paper; to determine its area will then be simple, for one has only to split it up into any number of right-angled triangles, the area of each of which will be half that of a square or rectangle whose sides are equal to the base and altitude of the triangle. Take, for example, a room of trapeziform shape, thus :—



It will be seen that no two sides are of equal length, and that neither is parallel with any other; measurements are not material, provided the scale of the figure is known. First draw a diagonal from A to C, which will divide the figure into two irregular triangles; then at points upon the common base A C erect perpendiculars opposite the points B and D (as shown by dotted lines) which will divide the figure into four right-angled triangles. It is not necessary to measure up each of the four separately. Take the measurement of the base line A C: multiply it by the sum of the two perpendiculars and divide by 2. The result will be the superficial area of the figure, thus: A C = 40ft. 6in., perpendicular to B = 10ft. 4in., perpendicular to D = 24ft. 3in., then 40′ 6″ × (10′ 4″ + 24′ 3″) ÷ 2 = 700′ 3″ 9‴ or 700ft. 4in. super.

The area of a circle equals the square of the diameter by ·7854; thus the cubical capacity of a cylindrical vessel is readily computed. The area of an ellipse equals the product of the two axes by ·7854, and it may be worth remembering that the side measure of a square vessel equal in superficial area to one of circular shape will be the diameter of the latter by ·8862, and the diameter of a circular vessel equal in superficial area to one of square shape will be the side measure of the latter by 1·128; also that the circumference of a circle equals its diameter by 3·1416, or approximately 3⅐.

It will perhaps be in supering or cubing small dimensions that the duo-decimal system will prove the handiest, such, for instance, as working up the stuff on a joiner's rod sheet, which latter should have a couple of columns ruled on the right-hand side, one each for superficial and cubical measurements. Let the following serve as an example :—

| | | Cube. | | Super. | | |
|---|---|---|---|---|---|---|
| | | ″ | ‴ | ′ | ″ | ‴ |
| 2/3·6 × 4½ × 2 | - - | 5 | 3 | | | |
| 2/2·6 × do. | - - | 3 | 9 | | | |
| 4·8 × 7 × 1 | - - | | | 2 | 8 | 8 |
| 1·2 × 9 × 2 | - - | | | | 10 | 6 |
| 3·6 × 3 × 3 | - - | 2 | 8 | | | |
| 2/8·0 × 2 × 1½ | - - | | | 2 | 8 | 0 |
| | | 11 | 8 | | | |

*Summary* (for posting from).
1′ 0″ cube.
11″ super. 2″
2′ 8″ super. 1½″
2′ 9″ super. 1″

Now for the method of working up these items. The small figure at the left of the diagonal indicates that the dimension to which it is attached is to be doubled, trebled or quadrupled, as the case may be. Taking the first two items, the dimension has to be doubled, and we thus get 7ft. and 5ft. respectively, although for our purposes we lose sight of their measurement denomination and let them stand simply as 7 and 5. We next get the area of the section by multiplying width by thickness: 4½″ × 2″ = 9″, and drop the product into the next lower power or denomination, and instead of 9 *inches* we call it 9 *parts* (9‴). Thus 7 × 9‴ = 63‴, or 5″ 3‴, and 5 × 9‴ = 45‴, or 3″ 9‴, the cubical contents or "cube" of the two items in question. For the third item we proceed by duo-decimals as before :—

0′ 7″
4′ 8″
2′ 4″
4″ 8‴
2′ 8″ 8‴

and so on, making a little summary at the bottom of the sheet for convenience of posting the details to the prime-cost ledger.

In computing the containing power in liquid measure of any receptacle the cubical contents, obtained by duo-decimals, may be multiplied by 6⅛, which will give an approximately correct result; but if extreme accuracy is required 6·2355 must be the multiplier. The answer will be in imperial gallons. Though a gallon actually occupies 277·123 cub. in., it has been fixed by Act of Parliament at 277·274 cub. in., so that a cub. ft. will not hold 6¼ gals. as generally computed. A gallon of distilled water weighs 10lbs.

In supering glass it should be remembered that the custom in the glass trade is to count all fractions in lineal measure as full inches.

Though it is not intended to deal with quantity taking or estimating, there is certain work in connection with these operations that will assuredly fall to the junior (irrespective of the extension of prices and additions, or the checking of them, which call for no special mention).

The squaring and cubing of dimensions having already been dealt with, attention will now be given to the working of such dimensions up beyond the "feet" stage, at which point duo-decimals vanish from the scene. Brickwork facings, plastering, &c., being calculated by the yard super., the measurements already in feet merely require dividing by 9 (9 sq. ft. = 1 sq. yd.); and as flooring and slating are calculated by the "square," which is 100 ft. super.(10ft. by 10ft.), dimensions already in feet require dividing by 100, any remainder being usually expressed as some fraction of a square rather than as so many squares and so many feet super.; thus 738 ft. super. would be expressed as $7\frac{2}{5}$ squares rather than $7\frac{38}{100}$, $\frac{2}{5}$ being equal to $\frac{40}{100}$, therefore quite sufficiently approximate for all purposes. Brickwork, although the practice varies according to locality, is generally computed by "rods," a rod being 272 ft. super. Dimensions are usually taken off in superficial measure of stated thicknesses from half-brick upwards, chimneys being measured solid and the dimension cubed. The standard measurement in the London district is the "rod" of brick and a half thickness, or, as it is variously termed, 13½in. or 14in. work. After the several dimensions are worked up, a summary is made giving the total measurements of each of the several thicknesses, and then each total is brought to the standard thickness. This is easily done by multiplying the dimension either by the number of half-bricks contained in the thickness, or the number of complete 1½in. portions, and dividing by the same factor contained in the standard thickness. The following examples will show how different quantities of various substances are "reduced," the left-hand example showing the longest and clearest method, and the right-hand example the shortest method, though the one most liable to result in error unless one is continually at the work.

4½″ work, or half-brick 3)648·9 super.
216·3

As the dimension is already in half-bricks nothing remains but to divide by the number of half-bricks in brick and a half = 3. Obviously there can be no shorter method.

9″ work, or one brick. 648·9 super. 3)648·9 super.
2 216·3
3)1297·6 432 6
432·6

In the first case we multiply by the number of half-bricks in 9in. = 2, and divide by 3 as before. By the shorter method we simply deduct one-third of the measurement.

13½″ or 14″ work, or brick and a half. 648·9 super. (Is already "standard.")

18″ work, or two-brick. 648·9 super. 3)648·9 super.
4 216·3
3)2595·0 865·0
865·0

Two bricks equal 4 half-bricks. Multiply by 4 and divide by 3 as before. By the shorter method we proceed the same as with 9in. work, only instead of deducting a third we add it.

22½″ work, or two and a half brick. 648·9 super. 3)648·9 super.
5 216·3
216·3
3)3243·9 1081·3
1081·3

The first method needs no elucidation; in the second case a third of the measurement is added twice.

Cube. 648·9 cube. 9)648·9 cube.
8 72·1
9)5190·0 576·8 super.
576·8 super.

As in "cube" (= 12in. thick) we have no even number of half-bricks, fractions of 1½in. are employed instead, and 12 ÷ 1½=8, therefore multiply by 8; similarly 13½ ÷ 1½ = 9, which is used as a divisor. By the shorter method, deduct ⅑th to obtain the same result.

Having all measurements reduced to standard thickness, a summary must be made in order to further reduce the items to "rods":—

| | | |
|---|---|---|
| ½ brick | - - | 216·3 |
| 1 ,, | - - | 432·6 |
| 1½ ,, | - - | 648·9 |
| 2 ,, | - - | 865·0 |
| 2½ ,, | - - | 1081·3 |
| Cube | - - | 576·8 |

272)3820·5(14
272
1100
1088
12

Answer: 14 rods 12 ft. super.

When extending the prices in a bill of quantities anyone fresh to the work might be puzzled on finding attached to the price of brickwork figures something like this: 12/10/-
11d. The upper figures represent the price per *rod;* the lower one the rate per *foot;* sometimes the lower figures are omitted, but they are used in the calculation notwithstanding: 272ft. of brickwork at 1s. would amount to £13 12s., thus a rod at £13 10s. is almost exactly the equivalent of 272ft. at 1s., and a rod (= 272ft.) at 1d. per ft. = £1 2s. 8d.; so that for computing the value of any odd number of feet short of a rod it is usual to take a short cut, and with £13 10s. and its equivalent foot rate of 1s. as a basis, take from or add to the foot rate a halfpenny for every 10s. in the rod rate below or above the "standard" between £11 and £14. This method aids calculation and introduces so small a source of error into the result as to be not worth mention; but for the next 10s. rise above £14 only $\frac{1}{4}$d. must be added to the foot rate, the $\frac{1}{2}$d. jump being again used for any further similar rise in the rod rate. It need hardly be pointed out that differences of 5s. in rod rates will be met by farthing variations in the "foot" equivalent.

In order that the actual foot rates may be compared with those of the "short-cut" computations, the following table has been prepared, and may be handy to keep for ready reference:—

| Rate per rod. | | | | Equivalent rate per foot. | | | |
|---|---|---|---|---|---|---|---|
| | | | | Actual.* | | | Computed. |
| £ | s. | d. | | | | d. | d. |
| | 10 | 0 | - | ·4401 or, say | | $\frac{11}{25}$ | - $\frac{1}{2}$ |
| 11 | 0 | 0 | - | 9·7 | ,, | $9\frac{12}{17}$ | - $9\frac{1}{2}$ |
| 11 | 5 | 0 | - | 9·926 | ,, | $9\frac{63}{64}$ | - $9\frac{3}{4}$ |
| 11 | 10 | 0 | - | 10·147 | ,, | $10\frac{1}{7}$ | - 10 |
| 11 | 15 | 0 | - | 10·367 | ,, | $10\frac{1}{3}$ | - $10\frac{1}{4}$ |
| 12 | 0 | 0 | - | 10·59 | ,, | $10\frac{10}{17}$ | - $10\frac{1}{2}$ |
| 12 | 10 | 0 | - | 11·03 | ,, | $11\frac{1}{34}$ | - 11 |
| 13 | 0 | 0 | - | 11·47 | ,, | $11\frac{8}{17}$ | - $11\frac{1}{2}$ |
| 13 | 10 | 0 | - | 11·911 | ,, | $11\frac{31}{34}$ | - 12 |
| 14 | 0 | 0 | - | 12·353 | ,, | $12\frac{1}{3}$ | - $12\frac{1}{2}$ |
| 14 | 10 | 0 | - | 12·8 | ,, | $12\frac{9}{11}$ | - $12\frac{3}{4}$ |
| 15 | 0 | 0 | - | 13·235 | ,, | $13\frac{4}{17}$ | - $13\frac{1}{4}$ |
| 15 | 10 | 0 | · | 13·675 | ,, | $13\frac{2}{3}$ | - $13\frac{3}{4}$ |
| 16 | 0 | 0 | - | 14·115 | ,, | $14\frac{2}{17}$ | - $14\frac{1}{4}$ |

* These figures are approximately correct.

It is a somewhat common practice when estimating to roughly "prove" the priced bill of quantities by cubing up the building being estimated. It is even said that some happy-go-lucky builders are content to use this method for estimating, rather than go to the trouble of taking off quantities, or, rather, it should be said, than incur the expense of having them taken off by a quantity surveyor, for such builders are seldom able to manage this job for themselves. But it is not a plan to be recommended; at best it provides but a rough approximation of the value of a building, for, even if the ascertained cost per "cube" of a certain building of similar character is known, and can thus be used as a "constant," materials of construction, ornateness of design and internal fittings and arrangement vary the cost so greatly as to render any table of constants useless for more than a very rough approximation. The better the class of work, the more the difficulty is increased, but even for the plainest cottage property it would pave the way for too great a chance of error to be in any way reliable. Still, the method affords a slight check on the correctness or otherwise of a worked-up estimate, as indicating a probable error in measurements or pricing if the "cube" price showed any wide divergence from the detail derived figures.

The cube of a building is arrived at by first measuring the main building from the bottom of the footings to half-way up the roof; length and breadth will, of course, be outside sizes measured from the plans. Offsets will then be measured separately, but small offsets, such as bay windows, lean-to w.c. and "coals" additions are usually not cubed, a determined lump sum being added to the price obtained by the cubing. The dimensions are cubed as previously shown, and the result is multiplied by some figure as "constant" which may be arrived at by the prime cost per cube of some similar building.

In Spon's "Architects' and Builders' Price Book" there is a table of approximate "cube" values which may be quoted:—

| | | Per cub. ft. |
|---|---|---|
| Labourers' cottages | - - | 4d. |
| Small suburban houses | - | 6d. to 8d. |
| Mansions: main building | - | 10d. to 15d. |
| servants' offices | | 6d. to 10d. |
| Stables | - - - | 7d. to 10d. |
| Public libraries and technical schools | - - - | 8d. |
| Town halls, &c. | - - | 13d. |

With a range of 50 per cent., as shown by the third item, it will at once be seen how hopeless it is to "swear by" any table of constants—in this or any other direction where labour has to be considered, apart from the disturbing factors previously mentioned. Tables for a builder's own guidance, however, may be prepared by ascertaining the cost per cube of buildings actually erected by him, or by the accepted tender price of a building for which he may have estimated, provided he has taken the cubical measurements before parting with the plans.

Spon's price-book also gives a short table of the actual cost of the following buildings:—

| | | Per cub. ft. |
|---|---|---|
| Houses of Parliament | - - | 2s. 6d. |
| Foreign Offices - | - - | $12\frac{3}{4}$d. |
| Manchester Assize Courts - | - | $9\frac{1}{2}$d. |
| St. Thomas's Hospital | - - | 9d. |
| Hotel Victoria, London | - | 1s. 6d. |
| Bow Street Police Station | - | 11d. |

The drawing-up of legal documents does not form much of a builder's work and, generally speaking, such had better be left to a solicitor. Still, agreements which will be valid in a court of law may be, and frequently are, drawn up without incurring the expense involved by having recourse to the solicitor. Many a dispute would be avoided if the terms of a verbal agreement had at the time of making been reduced to writing; with the best possible intentions on either side it is possible for one to get a diametrically opposite idea to that intended to be conveyed. When the matter is in black and white, whilst disputes are not impossible, they are certainly rendered more improbable.

Although a lawyer delights in the use of mystifying legal jargon, it is by no means necessary that such should be employed, and the layman will do better to avoid it in drawing agreements, making them as simple and terse as possible and avoiding ambiguous terms. An agreement to be valid must not be one-sided; it must be two-part. If John Jones agrees to perform certain work for a certain sum of money, even though the document proving it may be duly signed and stamped, it is incomplete unless Tom Smith, with whom the agreement is made, also agrees that in consideration of the work to be done he will pay John Jones a certain sum of money, or otherwise offer to him some "consideration." The two points vital to any agreement are that it shall be between A. B. of the one part and C. D. of the other part, and that there shall be "consideration." An agreement to pay a certain sum of money is useless unless consideration is disclosed. A contract made between two persons, whereby one agrees to purchase a certain quantity of goods, is of no avail unless the other also agrees to sell. An apprenticeship indenture binding a youth to learn a trade is not binding unless the employer also agrees to teach, and a house-letting agreement is waste paper unless the landlord agrees to let and the tenant agrees to take. Further, an agreement to be valid supposes something to be done—something in the future tense; one relating to something that is past is valueless, except it be merely a reduction to writing of some previously-made verbal agreement, in which case, though the work might be done, it would be reasonable to imply that it was done under mutuality.

A verbal agreement is as valid as a written one if proof be not lacking, but it is this element of proof that causes trouble in a court of law for, obviously, a witness's memory may be no more reliable than that of either of the principals; so that should an owner promise to a builder, in the presence of witnesses, extra remuneration if he completes his contract within a stipulated time limit, and the builder earns his reward, he can enforce the terms of the agreement, if necessary, provided his witnesses are able to satisfy the court of the existence of such an agreement; but if after the work is completed the owner should promise extra remuneration, and should afterwards repudiate his promise, the builder cannot bind him to his promise, because it relates to something that is past and gone.

Before an agreement can be produced as evidence it must be stamped and signed with the names of both parties thereto, though it is not customary for both to sign at the time of execution unless the document is to be held by a third party. Usually the memorandum is drawn in duplicate, and each party signs that handed to the other, and though not absolutely necessary it is well, in order that no question of forged signatures may ever crop up, to have a witness who will sign each document as such. Signatures may be written over a sixpenny adhesive stamp, or the document may, at any time within thirty days from date of execution, be handed in at any money order office, together with a fee of 6d., which will ensure the forwarding to London of the document, the impression thereon of the revenue stamp, and its return to the owner the second day after leaving it without any further charge. The adhesive stamp may be one of full value, or any number of stamps of lesser value may be used to make up the amount of the duty, but, in addition to the signature, the date also must be written across the stamp or stamps. To recapitulate: an agreement to be valid must bear evidence of mutuality, must be for valuable consideration, must be to secure future acts, and must be duly signed and properly stamped. Agreements in which the consideration is of less value than £5 do not require stamping; and an unstamped agreement may be stamped at any time by payment of a penalty of £10 in addition to the duty. The Commissioners of Inland Revenue are empowered to remit or mitigate penalties, provided application is made within twelve months from the time when the duty first became payable, but some special claim must be established to ensure the granting of the privilege.

Laymen drawing up agreements should be careful not to accept any remuneration for doing so, as anyone not a qualified solicitor who prepares a deed for fee or reward is liable to a penalty of £50; and it may not come amiss to issue a warning as to the use of stops, as the accidental inclusion of a superfluous comma or the omission of a needful one may cause trouble by allowing a dual construction to be placed upon some vital provision. Lawyers prepare legal documents without the use of stops of any sort.

*(To be concluded.)*

## ELECTRICAL NOTES.

### The Corner in Electric Lamps.

THE recent announcement of the combination of electric incandescent lamp manufacturers on the Continent merely consummates what has been threatened for a long time. Whilst in England there are only two or three really large makers of these lamps, the Continent can boast of a great many more, and these have been cutting prices for years past. As a result, the price of foreign lamps in England has not been a dangerous factor, for the foreigner has partly recouped himself here on account of the higher prices obtaining in England. Now, however, mutual jealousies seem to have been allayed, and the following firms have combined: Siemens and Halske of Berlin, the Berlin General Electricity Co. and the United Electricity Co. of Buda-Pesth, Sturm & Co. of Vienna, and Phillips & Co. of Amsterdam. The price abroad has been advanced to wholesale dealers from 3·12d. to 6d. per lamp, and in connection with this an electrical contemporary remarks, with some naïvete: "It may be reasonably expected that an advance will soon take place in the price of the large number of foreign lamps sold in Great Britain." We venture to prophesy rather that the increase of 48 per cent. obtaining abroad will enable the combine to dump their lamps in England at a lower price than before.

### The Value of Cheap Lamps.

It is the greatest mistake, however, for consumers to think that they benefit by purchasing cheap lamps. The same law holds as in buying a suit of clothes, and the consumer loses in the end. In explanation of this it should be pointed out that in parts of the Continent the electricity supply authorities provide their consumers with lamps free of charge, taking back the old lamp caps and charging a certain percentage on the current consumed. Now it must pay them to do this, unless the consumer goes round with a stick and breaks his lamps; and if the lamps are inefficient and take more current than they should do for light given, all the better for the supply authorities. Therefore, the lamp makers do not throw out the "wasters" as in England, but sell all the lamps they make, and as a result they can turn them out more cheaply than in England, where from 25 to 40 per cent. of the lamps made are thrown out and scrapped. Consequently the purchaser of a foreign-made lamp buys dearly, as in the end he will either pay more for current consumed, or will get less light than with an English-made lamp.

### Novelties in Lamps.

In the lamp trade there is now being made a distinct attempt to bring out something new. The ordinary pear-shaped lamp has hitherto held sway, but a few years ago a lamp of a more squat appearance was introduced with an opal or silvered reflector to throw the light downwards. Various devices have also been adopted from time to time with the object of dispersing the light by means of flutings in the glass, but it cannot be said that any of these have become popular. The present unrest may be partly due to the introduction of the Nernst lamp and to the recently produced miniature arc lamps, both of which are more efficient sources of light than the incandescent lamp. Makers of the latter recognize that with present methods of manufacture the actual total light efficiency cannot be increased, so they have turned themselves to altering the shape of the filament or the structure of the bulb, in order to get a better useful effect. Few people appreciate the fact that the so-called 16-c.p. lamp only gives that light in a horizontal direction, and where it is least wanted, whereas the photometric measurement in a vertical direction is only 7 c.p. At least two new lamps have been recently put on the market to overcome this fault. The new Mackey lamp has its filament twisted in such a way as to obtain a maximum light effect downwards. The Bohm Lens lamp is made with double concave and convex lenses in the glass bulb, in such a manner that, whilst practically no light is thrown out horizontally, that falling at an angle of 87 degs. from the horizontal gives up to 45 candle power with a nominal 16-c.p. filament. This does not mean that something is being got from nothing, but merely that the total light is concentrated into one direction instead of dispersing in useless directions.

A. M. I. E. E.

## Law Cases.

**Carriage of Drain Pipes: Custom of the Trade.**—Messrs. Ernest Mathews & Co., of London, E.C., recently sued Mr. K. C. Jarvis, of Tonbridge, for £5 3s. 11d. for drain pipes supplied. The defendant said that when the pipes arrived at Tonbridge Station half of them were broken. The plaintiffs' solicitor said that the goods went "at the risk of the purchaser," as stated in their price list. The defendant said he never saw that. The traveller to whom the order was given said it was a custom of the building trade, when nothing was said to the contrary, to send drain pipes at the customer's risk. The defendant questioned this, but the judge said the law was in favour of the plaintiffs, for whom judgment was entered, with costs.

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Manchester, Trafford Park.

# Current Market Prices.

### FORAGE.

| | | £ | s. | d. | £ | s. | d. |
|---|---|---|---|---|---|---|---|
| Beans .. .. .. | per qr. | 1 | 14 | 0 | 2 | 0 | 0 |
| Clover, best .. .. | per load | 4 | 5 | 0 | 4 | 10 | 0 |
| Hay, good .. .. .. | do. | 3 | 12 | 6 | 4 | 0 | 0 |
| Sainfoin mixture .. | do | 3 | 15 | 0 | 4 | 5 | 0 |
| Straw .. .. .. | do. | 1 | 10 | 0 | 2 | 0 | 0 |

### OILS AND PAINTS.

| | | £ | s. | d. | £ | s. | d. |
|---|---|---|---|---|---|---|---|
| Castor Oil, French .. | pet cwt. | 1 | 0 | 5 | | — | |
| Colza Oil, English .. | do. | 1 | 3 | 6 | | — | |
| Copperas .. .. | per ton | 2 | 0 | 0 | | - | |
| Lard Oil .. .. .. | per cwt. | 2 | 15 | 0 | 2 | 17 | 0 |
| Lead, white, ground, carbonate .. .. | do. | 1 | 4 | 10 | | - | |
| Do red .. .. .. | do. | 1 | 0 | 1½ | | | |
| Linseed Oil, barrels .. | do. | 0 | 18 | 0 | | — | |
| Petroleum, American .. | per gal | 0 | 0 | 7¼ | 0 | 0 | 7⅜ |
| Do Russian .. | do | 0 | 0 | 5¾ | 0 | 0 | 5⅞ |
| Pitch .. .. .. | per barrel | 0 | 8 | 0 | | - | |
| Shellac, orange .. .. | per cwt | 6 | 0 | 0 | 6 | 3 | 0 |
| Soda, crystals .. .. | per ton | 3 | 2 | 6 | 3 | 5 | 0 |
| Tallow, Town .. .. | per cwt | 1 | 6 | 3 | 1 | 6 | 6 |
| Tar, Stockholm .. .. | per barrel | 0 | 19 | 6 | | | |
| Turpentine .. .. | per cwt. | 2 | 3 | 4½ | | — | 4½ |

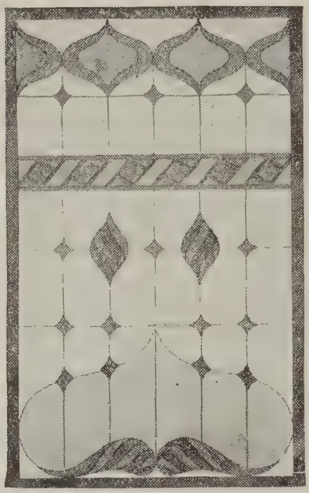
### METALS.

| | | £ | s. | d. | £ | s. | d. |
|---|---|---|---|---|---|---|---|
| Copper, sheet, strong .. | per ton | 68 | 0 | 0 | | | |
| Iron. Staffs., bar .. .. | do. | 6 | 5 | 0 | 6 | 7 | 6 |
| Do. Galvanised Corrugated sheet .. | do. | 11 | 0 | 0 | 11 | 5 | 0 |
| Lead, pig, Soft Foreign .. | do. | 11 | 3 | 9 | 11 | 5 | 0 |
| Do. do. English common brands .. .. | do. | 11 | 10 | 0 | | | |
| Do. sheet English 3lb. per sq. ft and upwards .. | do. | 14 | 0 | 0 | | — | |
| Do. pipe .. .. .. | do. | 15 | 0 | 0 | | - | |
| Nails.cut clasp,3in to 6in. | do. | 9 | 5 | 0 | | — | |
| Do. floor brads .. | do. | 9 | 0 | 0 | | — | |
| Steel, Staffs.. Girders and Angles .. .. | do. | 5 | 15 | 0 | 7 | 2 | 6 |
| Do do. Mild bars .. | do. | 6 | 5 | 0 | 6 | 15 | 0 |
| Tin, Foreign .. .. | do. | 117 | 15 | 0 | 118 | 5 | 0 |
| Do. English ingots .. | do. | 121 | 10 | 0 | 123 | 0 | 0 |
| Zinc, sheets, Silesian .. | do. | 22 | 12 | 6 | | - | |
| Do. do. Vielle Montaigne | do. | 23 | 2 | 6 | | — | |
| Do Spelter .. .. | do. | 20 | 15 | 0 | 21 | 0 | 0 |

### TIMBER.

#### Soft Woods.

| | | £ | s. | d. | £ | s. | d. |
|---|---|---|---|---|---|---|---|
| Fir, Dantzic and Memel | per load | 1 | 13 | 0 | 3 | 0 | 0 |
| Pine, Quebec, Yellow .. | do. | 5 | 5 | 0 | 6 | 5 | 0 |
| Do. Pitch .. .. | do. | 2 | 12 | 0 | 3 | 3 | 0 |
| Laths, log, Dantzic .. | per fath. | 4 | 10 | 0 | 5 | 10 | 0 |
| Do. St. Petersburg .. | do. | 7 | 5 | 0 | | - | |
| Deals, Skönvik Yellow 2½×7 | per fath. | 5 | 0 | 0 | | — | |
| Do. Nederkalix, Yellow, 2nd, 3×7 | do. | 9 | 10 | 0 | | — | |
| Do. do. do. do. do. | do. | 9 | 5 | 0 | | — | |
| Do. Rimonski unsorted bright spruce 3×9 | do. | 9 | 0 | 0 | | — | |
| Do. do. do. do. 3×8 | do. | 8 | 10 | 0 | | — | |
| Do. do. do. do. 3×7 | do. | 7 | 10 | 0 | | — | |
| Do. Archangel Yellow, 2nd 3×9 | do. | 14 | 15 | 0 | | — | |
| Do. Domsjo, Yellow, 3rd, 3×9 | do. | 13 | 10 | 0 | | — | |
| Do. do. do. do. do. | do. | 14 | 0 | 0 | | — | |
| Do. Abo, Unsorted Yellow, 2½×7 | do. | 9 | 10 | 0 | | — | |
| Do. do. do. do. do. | do. | 9 | 5 | 0 | | — | |
| Do. Mesane, White, 2nd, 3×9 | do. | 9 | 10 | 0 | | — | |
| Deals, Oserko, Yellow, 5th, 3×9 | per fath. | 8 | 10 | 0 | | — | |
| Do. Petschora, Yellow, 4th, 3×9 | do. | 9 | 15 | 0 | | — | |
| Do. Galatz, White, 1st, 3×9 | do. | 8 | 15 | 0 | | — | |
| Do. Quebec, Unsorted, Spruce, 3×11 | do. | 8 | 10 | 0 | | — | |
| Do. do. do. do. 3×10 | do. | 8 | 15 | 0 | | — | |
| Do. do. Yellow, 3rd, 3×11 | do. | 12 | 10 | 0 | | — | |
| Do. do. do. do. do. | do. | 12 | 15 | 0 | | — | |
| Do. do. White Spruce, 3rd, 3×9 | do. | 9 | 10 | 0 | | — | |
| Do. do. do. do. do. | do | 9 | 15 | 0 | | — | |
| Battens, all kinds .. | do. | 6 | 1 | 0 | 21 | 15 | |
| Flooring Boards 1in. prepared, 1st .. .. | per square | 0 | 11 | 6 | 0 | 12 | 3 |



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# Bricks and Mortar.

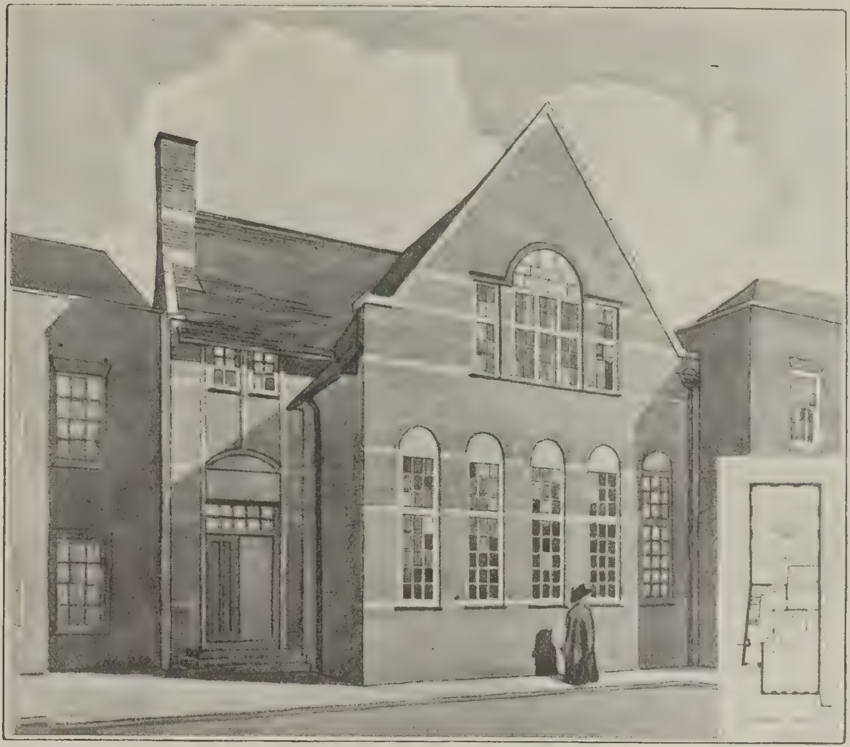
**phorism for the Week.**

*In the Middle Ages the church was a onument seen only within, and not one put p as a show in open spaces.*—J. K. HUYSMANS.

**ur Plates.** THE panelling on the walls and ceiling of the billiard-room at Voodlyn, Dundee, of which Mr. Charles G. outar, of Dundee, is the architect, is of fumed ak. The frieze over the ingle-nook is of ak framing with modelled plaster panels.—he guildhall at Lavenham, Suffolk, is a eautiful example of the timber-framed uildings of the sixteenth century. It was uilt for John de Vere, fifteenth Earl of xford, the founder of the Guild of Corpus hristi; on the corner post is carved a small ull-length effigy of him; he is dressed in late-armour, and stands on a pedestal or uttress beneath a cusped and crocheted anopy. Inside the guildhall much of the ld work remains, and the cellar is especially teresting. It is said that in this cellar r. Taylor was confined, when on his way his martyrdom on Aldham Common. he pencil sketch reproduced is by Mr. Basil liver, of London, W.—The Manor House t Yaverland, near Sandown, is one of the any interesting Jacobean manor-houses on e Isle of White. It is very pleasantly tuated and adjoins the ancient (restored) urch. Over the archway is the date 1620. he two wings project about 12ft. to 13ft., nd on the lower floor contain the dining-oom and library, the central portion comrising the hall and morning-room. The rawing-room is at the rear of the library. is noteworthy that there is no gabled porch the centre, as common to houses of this eriod in other parts of the island. Our lustration is by Mr. Sydney E. Castle.

**he Country uilder.** THE following note appeared in a recent number of the "Amateur Photographer": Every country builder is an amateur archict; of all amateurs he is often the worst, r by his ignorance he entails suffering nd inconvenience on many; the amateur usician may drive a few people mad; the mateur artist may be the cause of much bad nguage; the amateur gardener may cut way all his fruit buds; the amateur doctor ay make a few people sick; but not one of em does the harm that the amateur archict does." No doubt, the speculative country uilder who prepares his own plans without e aid of professional assistance is referred to.

**ld English ottages.** IN some old cottages adjoining the "Eagle Hotel" at Midhurst, Kent, there are me immense beams having numerous rows small holes in them. Many were the uesses made as to their origin and use till it as explained by Mr. Boxall, K.C., that they ere relics of the time when the beams formed art of the old Wooden Walls of England. imbers marked in this way are a common ature of the wooded parts of the south of ngland, whence many thousands of loads timber were sent to the ship-building yards days gone by. This practice made timber r building purposes scarce, and it was cusmary for the beams of old ships to be sent ack to the district from which the shiprights obtained their supplies; so it comes out that numberless cottages contain a odly proportion of ships' timbers amongst eir woodwork. The cottages at Midhurst e now being connected to the hotel by a rridor, under the supervision of Mr. J. alkingbridge-Parker, architect, of London; r. T. J. Woodrow, of Messrs. Feltham, oodrow & Co., London, E.C., also taking prominent part in the work.



DESIGN FOR A PUBLIC BUILDING. SIDNEY B. CAULFIELD, ARCHITECT.

**Design for a Public Building.** THE design by Mr. Sidney B. Caulfield reproduced above was made for Castleford in Yorkshire. The front elevation is to be faced with red bricks and Morley stone. The front entrance is about 15ft. back from the wrought-iron boundary railing enclosing the forecourt. Through the draughtsman's error these facts are not very plain on the drawing (which, it may be mentioned, was exhibited at the Academy this year.)

## ARCHITECTURAL PUPILAGE.

NO topic is more worthy of the attention of architects in this kingdom than that associated with the training of pupils; it is a topic, indeed, which continues to attract increasing attention, resulting in the adoption of quite new methods of study. This is eminently shown in the case of the Architectural Association Day School, the first headmaster of which, Mr. A. T. Bolton (who now retires from the post after two years' successful work), has expressed his views of the matter in the paper which he read before the last meeting of the Association. It is generally admitted that a boy from school entering an architect's office is seriously handicapped and cannot make profitable use of his whole term of pupilage. The day school thus becomes not only a charter for him, but is also an immense relief to the practising architect. Mr. Bolton observed in the paper to which reference has been made, that neither Gothic nor Classic art of themselves are wholly necessary to salvation, and that mere "examination facts" are not of themselves of any value whatever. What the beginner needs is a good general survey of the historical development of architecture treated in relation to the character and conditions of the people and countries where it originated. A stumbling-block for him is that presented in what is called the study of Nature; as, for instance, when it is suggested that the nave of a Gothic cathedral is a copy of a grove of trees, or that there is a relation between an elephant's foot, a human hand when raised to support a weight, and the Doric column (*vide* Garbett's "Principles of Design"), or that Renaissance work has a basis for some of its forms in sea shells.

The student once having found admittance to Nature's school is provided with a field of unending study. He must never rest content with a mere feeling after Nature's charm. Emotion must be translated into work, however imperfect, and the effort maintained through cloud as well as sunshine.

The student's greatest enemy is his own self-conceit. There is always a place for the patient worker; but the flashy student incapable of independent and sustained effort will always remain a burden to his teacher. As to the basis of instruction in a day school opinions will naturally differ, but we are not entitled to set students on a path which will make it harder than it need be for them to earn money within a reasonable period. The Architectural Association Day School has been run on semi-office lines, with an effort after a thorough grounding in the drawing methods in common use. We may agree that skill in draughtsmanship is by no means the essential quality of an architect, but it is certainly a necessary qualification for an assistant requiring a place in an office.

In the second-year course of the Day School the student is started in that important branch of his future work—design—on very conservative lines, utilizing his interest in creating something to deepen his studies of the first year, and guiding him in his first essays by the sure aid of the past examples of his art.

## SKETCHES OF DETAILS.

NEXT Saturday, October 31st, is the last day for receiving sketches of details on modern buildings for which we offer four guineas—two guineas for the best pen-and-ink sketch and two guineas for the best sketch in wash. Particulars of the competition will be found on p. 126 of the issue for September 30th or on p. 106 of the issue for September 23rd.

## SCIENTIFIC MASONRY—III.

*(Continued from p. 153, No. 453.)*

### An Elliptical Arch.

By JOHN WORNELL.

TO illustrate this problem I have shown the arch rising 3ft. above the springing line. The properties, therefore, are such as are contained in a semi-cylindrical vault of 3ft. radius, cut obliquely until the desired opening is found.

The drawing, which is made to the same scale as that over shaft, shows the square section and plan of such a vault, cut obliquely on plan, with oblique section projected from the square section, which can be seen as a portion of an ellipse. In practice this would not be a convenient method of dealing with such a problem, and it is only given as an illustration to clear the ground for those who are not quite certain as to what an elliptical curve really is: I can point to no finer example than the arches of Waterloo Bridge, London.

When setting-out the arch on the drawing-board proceed as follows:—

Draw the horizontal or springing line, set up the centre line J K—rise of arch = L O, half the opening = L N. Ascertain the minor axis, N M = O L, fasten a straight-edge horizontally below the springing line, starting from L outwards; fasten another straight-edge vertically at centre line, starting from L downwards: these should be mitred together at L so as to ensure a smooth edge at the intersection. Set out the sliding trammel; prepare pointed end for pencil; fix in a round pin M (indicating the minor axis) and a pin at S (indicating the major axis).

Commence describing the curve at N by letting the pin at M slide along the straight-edge horizontally towards L; at the same time S travels downwards on the edge towards K. Great care must be taken when drawing the curve to see that the pins press gently against both straight-edges, otherwise there will be a cripple in the curve. This arch being parallel, to produce the back it is only necessary to extend the trammel as shown. If, as sometimes happens, the arch were not parallel, but stronger at the haunches, then the trammel would have to be rearranged to find the new major and minor axes.

Some persons prefer to have a drawing-board grooved horizontally and vertically for the pins to slide in, but this is expensive, and the method I have described does equally well. The face moulds require to be different for every voussoir, because each one differs in shape. This is, no doubt, the reason why an approximate elliptical arch struck from three centres is often introduced; but it certainly does not present such a graceful curve. To produce the joints in the elevation, from O as a centre, with radius O L, describe arc cutting O N at R: then O R = R Q and Q L = L P. Connect P R Q as shown by dotted line. Follow the same operation for each joint, bisecting the angle for each in succession, as shown at T T T: then T U is the direction of joint.

As another, still simpler, method of producing joint lines, at V V on curve bisect and produce arcs at W: the joint passes through the intersection.

Joints should be normal to the curve, and by the last arrangement the error is not so great.

### Entases of Shafts.

The swell of a diminished column being akin to the ellipse, I thought it best to deal with this at the same time.

The illustration shows a shaft of the Doric order—the height equal to seven diameters at the base. To set this up on the drawing-board proceed as follows:—Draw the base line, set up the centre line A B perpendicular above it. The top of the shaft is parallel to the base. Prick off the points C D and E F. Next take the half diameter at base with compasses, using E as a centre; draw arc at G. Snap chalk line passing through E G, and produce H on the base line. This gives the absolute length of the sliding trammel rod. Fasten straight-edges as for previous problem, but with the vertical this time *above* the base line. Put a pin in the trammel at G and a pencil at E: the trammel will then travel horizontally at H and vertically at G, producing a graceful curve, which is not produced with a bender or flexible rule. Nothing further is needed to explain this method, except that a separate template is needed for each portion of the shaft as it rises.

## Keystones.

**The old Royal Hospital at Belfast,** in Frederick Street, is to be sold or let.

**The new Gaiety Theatre** was opened last week. In our next issue we hope to publish an illustrated article dealing with the building.

**Bradford Corporation Improvements.**—Lieut.-Colonel W. H. Wellsted, M.I.C.E., has awarded £1,019 in the arbitration respecting the taking of 128yds. of land for the Church Bank improvement.

**Standard Sections.**—The Engineering Standards Committee have received a grant of £1,000 from the Government of India in recognition of the special work done by the Committee for the Indian Railways.

**A Carved Oak Reredos** is to be placed on the south wall of the interior of Arbroath Church as a memorial to the late ex-Provost Muir. Messrs. Harry Hems & Sons, of Exeter, are executing the work.

**Travelling Stairs for "Tube" Stations.**—A proposal is under consideration for constructing a travelling stairs at the Lothbury Station of the Great Northern and City Railway, now being carried out.

**A Spire at St. Paul's Church, Bournemouth,** has been erected as a memorial to Queen Victoria. It is of unusual shape, being oblong instead of square. Steel has been adopted as a framework. The total height is 165ft. The cost was £2,000.

**A Workmen's Dwellings Competition.**—At a meeting of the Swansea Town Council it was decided to award Mr. Glendinning Moxham, architect, of Swansea, the premium of £10 10s. for the best set of plans for artizans' houses. Sixty-three sets of drawings were sent in.

**"Architectural Reviews" Wanted.**—We are in need of the following copies of THE ARCHITECTURAL REVIEW:—Nos. 46 (September, 1900), 49 (December, 1900), 50 (January, 1901), 51 (February), 56 (July), 58 (September), 62 (January, 1902), 64 (March, 1902). We will give in return for any one of these copies the two current numbers for September and October.

**A new Chancel at St. Paul's Church, Harringay,** has been added at a cost of £5,500. The nave was consecrated in 1891. The total cost of the building has been over £16,000. The church is in the style of the thirteenth century, Mr. Silley, of Craven Street, W.C., being the architect. The chancel contains a side chapel, and in the basement, owing to the sloping nature of the site, large vestries and other accommodation.

**Some Picture Postcards of Old London** are being published by Messrs. Roberts & Co., of 6, Newcastle Street, Farringdon Street, E.C., price 6d. per packet of six. They have been reproduced by Messrs. Gee & Watson, Ltd., of 20 and 22, St. Bride Street, Ludgate Circus, E.C., from the drawings of Mr. Frank L. Emanuel which were published by THE ARCHITECTURAL REVIEW some time ago. The postcard reproductions are excellent, and many architects will doubtess like to get some.

**The new Tower of Beckenham Parish Church** is nearing completion.

**St. Silas's Church, Nunhead,** has just been consecrated. The cost has been £8,000.

**The Duke of York's Theatre** has been refurnished by Messrs. Oetzmann & Co., of Hampstead Road, N.W.

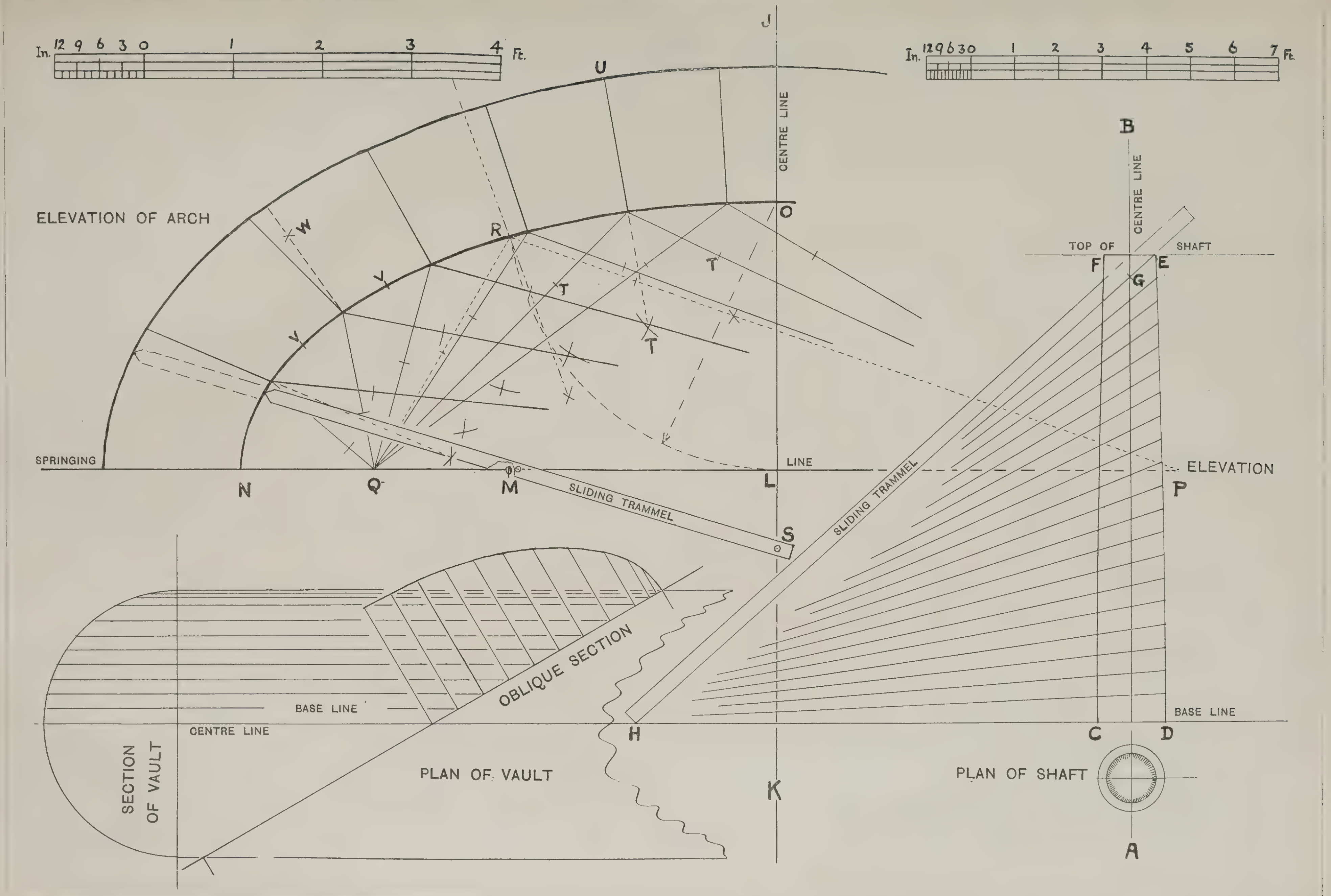
**Great Britain's Pavilion at the St. Louis Exhibition** is to be a reproduction of the famous Orangery in Kensington Gardens, designed by Sir Christopher Wren and erected by order of Queen Anne in 1704.

**Birmingham Municipal School of Art.**—On account of pressure of work away from Birmingham, Mr. Alfred J. Dunn, A.R.I.B.A., has resigned his lectureship in building construction and drawing (elementary, advanced and honours). The committee have appointed Mr. Francis B. Andrews, A.R.I.B.A., to succeed him. Mr. Andrews is an experienced lecturer, and has received from the Royal Institute of British Architects one of the twelve "certificates of competency to act as building surveyor" issued by the Institute on the result of examinations held up to 1901.

**The Tower of Kirkby-in-Furness Parish Church** has been restored. The walls of the tower have been cleaned of their rough coat, and the top of the tower has been improved by the insertion of dressings of St. Bees stone, whilst the four belfry windows have also been strengthened. Two small windows have been added to light the clock chamber. The clock is a new skeleton one, of copper gilt. It has been constructed to the designs of the architect for the tower restoration, Mr. J. S. Adkins, of Kew, and supplied by Messrs. Potts, of Leeds.

**Building Development at Newport, Mon.**—For many years the building development on the Tredegar estate at Newport and Cardiff has been carried out by Messrs. Habershon Fawckner & Groves, architects, formerly known as Habershon & Fawckner, of London, Newport and Cardiff, but the work has grown to such extent that it has been decided to form an architect's department in connection with the estate. This will be taken in charge by Mr. Z. F. Groves, who severs his connection with the firm and will now, under the direction of Lord Tredegar's agent, Mr. G. P. Mitchell Innes, confine himself to work on the estate only. The estate comprises the greater part of Newport and a large part of Cardiff, as well as large mining and agricultural districts in the counties of Monmouth, Glamorgan and Brecon. Plans for new estate offices to cost £4,500 are in course of preparation.

**Farm Buildings.**—Mr. T. Winder recently lectured before the Sheffield Society of Architects and Surveyors on "Farm Buildings." He opened with a plea for the use of local materials, and gave a rapid sketch of the evolution of the English homestead, which he believed was a development of the Saxon one, in which the master, men, maids and stock all dwelt under one roof. He referred to the danger of infection to wells, &c., by the percolation of water through worm or mole holes, or through holes made by the roots of trees and vegetables. He said that it was usual for the farmer to bear the cost of the team work for new buildings—which is probably a survival of the old boon-team service. He drew attention to the anomaly of the use of the same by-laws as to air-space and ventilation for cowhouses situate in the slums of a city and for those on the bleak Derbyshire and Yorkshire hills. The pigeon cote was not now obtaining the attention it deserved, and where a large cote was found upon a seventeenth-century homestead, that homestead would probably prove to have been the Manor House. Mr. Winder gave as examples of this: Kimberworth, The Grange, Hesley Hall, Handsworth, &c.



SCIENTIFIC MASONRY: AN ELLIPTICAL ARCH. BY JOHN WORNELL.

# Complete List of Contracts Open.

| DATE OF DELIVERY. | WORK TO BE EXECUTED. | FOR WHOM. | FROM WHOM FORMS OF TENDERS MAY BE OBTAINED. |
|---|---|---|---|
| | **BUILDING:** | | |
| Oct. 29 | Halifax—Warehouse, &c. | W. Conway & Sons, Ltd. | R. Horsfall & Son, 221 Commercial Street, Halifax. |
| " 29 | Merthyr Tydfil—Walls, Playgrounds, &c. | School Board | E. Stephens, Clerk, Town Hall, Merthyr Tydfil. |
| " 29 | Ipswich—Convenience | —— | E. Buckham, Borough Surveyor, Town Hall, Ipswich |
| " 29 | Leeds—Alterations, &c., to Bakery | —— | J. Charles & Son, 93 Albion Street, Leeds. |
| " 29 | Portland—Walls, &c. | Urban District Council | R. S. Henshaw, engineer, Council Offices, New Road, Portland. |
| " 30 | Bargoed, Wales—Converting Two Houses | —— | P. V. Jones, Architect, Hengoed. |
| " 30 | Bridlington—Five Cottages, &c. | E. H. Rudd | A. T. Martindale, 66 Wellington Road, Briddlington. |
| " 30 | Holyhead—Chimney Shaft | Urban District Council | P. F. White, Electricity Works, Bangor, North Wales. |
| " 30 | Sutton Scotney—Cottage | —— | C. W. Breadmore, 120 High Street, Winchester. |
| " 30 | Islington, N.—Superstructure of Postal Stores | Commissioners of H.M. Works, &c. | Secretary, H.M. Office of Works, &c., Storey's Gate, S.W. |
| " 30 | Brawdy, Pembrokeshire—Altering, &c., Chapel | —— | D. E. Thomas, Architect, Haverfordwest. |
| " 30 | Hull—Bath | Corporation | A. E. White, City Engineer, Town Hall, Hull. |
| " 30 | Pantywyll, Wales—Rebuilding Inn | —— | C. M. Davies, 12 High Street, Merthyr. |
| " 31 | Clonmel, Ireland—Church, &c. | —— | Rev. H. Kevin, Clonmel. |
| " 31 | Sheffield—Silica and Fireclay Goods | United Gas Light Co. | J. W. Morrison, Engineer, Co.'s Offices, Commercial St., Sheffield. |
| " 31 | Bristol—Central Library | Libraries Committee | A. Druitt, Clerk, Christchurch. |
| " 31 | Christchurch, Hants—Alterations to Roof, Platform, &c. | Union Guardians | Bernard & Son, 4 St. Stephen's Chambers, Baldwin Street, Bristol. |
| Nov. 3 | Tottenham, N.—Three Underground Conveniences | Urban District Council | W. H. Prescott, 712 High Road, Tottenham, N. |
| " 3 | St. Columb Minor, Cornwall—Church | —— | S. Hill, Architect, Green Lane, Redruth. |
| " 4 | Leavesden, near Watford—Sashes and Alterations | Metropolitan Asylums Board | T. D. Mann, Clerk, Board's Offices, Embankment, E.C. |
| " 4 | Willesden, N.W.—Workhouse Infirmary | Guardians | A. S. Snell, 22 Southampton Buildings Chancery Lane, W.C. |
| " 4 | Tooting, S.W.—Completion of Boundary Wall | Metropolitan Asylums Board | T. D. Mann, Clerk, Board's Offices, Embankment, E.C. |
| " 4 | London, N.—Demolishing Temporary Wards | Metropolitan Asylums Board | T. D. Mann, Clerk, Board's Offices, Embankment, E.C. |
| " 5 | Gillingham, Kent—Twenty-six Cottages | —— | E. J. Hammond, 21 Balmoral Road, Gillingham. |
| " 5 | Ketley, Salop—School, &c. | Education Committee | C. R. Dalgleish, Architect, Shrewsbury. |
| " 6 | Enniskillen—Cells | Fermanagh County Council | H. H. Archdall, Secretary, Court House, Enniskillen. |
| " 6 | Ewell, Surrey—Laundry and Mortuary | Asylum Committee | Clerk, Asylums Committee, 6 Waterloo Place, S.W. |
| " 9 | Haverstock Hill—Hospital | Hospital Committee | Young & Hall, 17 Southampton Street, W.C. |
| " 9 | Leeds—Alterations, &c., to Hospital | Workhouse Guardians | T. Winn & Sons, 22 Albion Street, Leeds, |
| " 10 | Leicester—Government Offices, &c. | Commissioners of H.M. Works, &c | Secretary, H.M. Office of Works, &c., Storey's Gate, S.W. |
| " 10 | Southampton—Additions, &c., to Offices | Commissioners of H.M. Works, &c. | Secretary, H.M. Office of Works, &c., Storey's Gate, S.W. |
| " 10 | Limerick—Kitchen, &c. | Guardians | H. J. Guinane, Clerk, Workhouse, Limerick. |
| " 10 | Lewisham—Branch Library | Borough Council | J. R. Vining, 89 Chancery Lane, W.C. |
| " 11 | Manchester—Telephone Exchange, &c. | Commissioners of H.M. Works, &c. | Secretary, H.M. Office of Works, &c., Storey's Gate, S.W. |
| " 14 | Liscard, Cheshire—School | Wallasey Education Committee | E. Kirby, 6 Cork Street, Liverpool, |
| | **ENGINEERING** | | |
| Oct. 29 | Ipswich—Piling | —— | E. Buckham, Borough Surveyor, Town Hall, Ipswich. |
| " 29 | Belfast—Railway Extension | Belfast & County Down Rly. Co. | Secretary, Queen's Quay Terminus, Belfast. |
| " 30 | Marina, Upper Barracca, Malta—Lift | Crown Agents for the Colonies | Receiver-General and Director of Contracts, Valletta, Malta. |
| " 31 | Swansea—Ducts, &c. | Corporation | C. A. L. Prusmann, Borough Electrical Engineer, Strand, Swansea |
| " 31 | Swansea—Tramways, &c. | Corporation | J. Thomas, Town Clerk, Guildhall, Swansea. |
| " 31 | Tregaron, Wales—Reservoir, &c. | District Council | J. Davis & Son, Engineers, Llanelly. |
| " 31 | Todmorden—Plant | Corporation | H. Waring, Electrical Engineer's Office, Todmorden. |
| " 31 | Vinaroz, Spain—Dredging Works | —— | Ministry of Public Works, Castellon, Spain. |
| " 31 | Wick, Scotland—Whart | Harbour Trustees | J. Barron, Engineer, Aberdeen. |
| Nov. 2 | Kingsbridge, Devon—Waterworks | Urban District Council | T. W. Latham, Engineer, Council Offices, Kingsbridge. |
| " 2 | Cromer and Mondesley, Norfolk—Railway | Joint Railways Committee | Company's Engineer, King's Cross Railway Station, London, N. |
| " 2 | Perth, Western Australia—Railway Carriages | —— | Agent-General for Western Australia, 15 Victoria St., Westminster. |
| " 2 | Madrid—Wharf Works | Ministry of Public Works | Ministry of Agric., Industries, Commerce & Public Wks., Madrid. |
| " 2 | London, E.C.—Railway Stores | Madras Railway Co. | J. Byrne, 61 New Broad Street, E.C. |
| " 2 | Spennymoor, Durham—Gasholder Task | Gas Committee | W. Cowley, Secretary, Gasworks, Spennymoor. |
| " 3 | West Ham—Electrical Plant | London County Council | Engineer's Department, County Hall, Spring Gardens, S.W. |
| " 3 | Birmingham—Destructor, &c. | Health Committee | Superintendent, Montague Street Whart, Birmingham. |
| " 3 | Bovey Tracey, Devon—Reservoir | Newton Abbot R.D.C. | W. Fox & B. A. Tatton, 5 Victoria Street, Westminster, S.W. |
| " 3 | Portsmouth—Pumping Station, &c. | Town Council | Borough Engineer, Town Hall, Portsmouth. |
| " 4 | St. Austell, Cornwall—Waterworks | Rural District Council | T. H. Andrew, 1 Trevarrick Villas, St. Austell. |
| " 4 | Stranraer, Scotland—Pier Widening | Wigtownshire Joint Rlys. Com. | Engineer, Glasgow & S W. Railway, St. Enoch Station, Glasgow. |
| " 4 | Watford—Sewerage Works | Urban District Council | H. M. Turner, 14 High Street, Watford. |
| " 5 | Manchester—Laying Telephone Pipes | Paving, Sewering and Highways Committee. | City Surveyor, Town Hall, Manchester. |
| " 5 | Chelmsford—Well | Rural District Council | J. Dewhirst, Engineer, Avenue Chambers, Chelmsford. |
| " 7 | Bridlington—Parade Extension Works | Corporation | E. R. Matthews, Borough Engineer, Town Hall, Bridlington. |
| " 7 | Dublin—Railway Stores | Gt. Northern Ry. Co. (Ireland) | T. Morrison, Secretary, Amiens Street Terminus, Dublin. |
| " 9 | Beckenham—Free Wiring | Urban District Council | R. P. Wilson, 66 Victoria Street, Westminster, S.W. |
| " 10 | Limerick—Heating Workhouse | Guardians | Clerk, Union Workhouse, Limerick. |
| " 12 | Ashford, Middlesex—Well | Managers, W. Lon. School Bd. | G. M. Taylor, 27 Great George Street, Westminster, S.W. |
| " 16 | Llanwrtyd Wells, Brecon—Reservoir, &c. | Builth R.D.C. | R. L. Bamford, Surveyor, Wildemarsh Street, Hereford. |
| " 16 | Bristol—Bridge | Docks Committee | W. W. Squire, Engineer, Cumberland Road, Bristol. |
| " 18 | Kilmarnock—Plant | Corporation | Town Clerk, Kilmarnock. |
| " 20 | Wednesbury—Electric Lighting | Corporation | F. J. Warden-Stevens, 34 Victoria Street, Westminster, S.W. |
| " 31 | Sowerby Bridge, Yorks—Trade Effluent Purification Works | Asquith Bottom Dyeworks | Spinks & Pilling, 20 Park Row, Leeds. |
| Dec. 15 | New York, U.S.A.—Tunnels | Pennsylvania, New Jersey & New York Railway Co. | Chief Engineer, 20 West Thirty-fourth Street, New York City, New York State, U.S.A. |
| 15 | New York, U.S.A.—Tunnels under North River | Pennsylvania, New York & Long Island Railway Co. | Chief Engineer, 20 West Thirty-fourth Street, New York City, New York State, U.S.A. |
| " 15 | New York, U.S.A.—Tunnels to Long Island | Pennsylvania, New York & Long Island Railway Co. | Chief Engineer, 20 West Thirty-fourth Street, New York City, New York State, U.S.A. |
| 15 | Los Andes, Chili—Railway | —— | Commercial Intelligence Branch, Board of Trade, 50 Parliament Street, S.W. |
| " 30 | Sidney—Telegraph, Telephone & Electric Light Material, &c. | General Post Office | General Post Offices, Sydney, Melbourne, Brisbane, Adelaide, Hobart and Perth. |
| 1904.<br>Jan. 19 | Rotherhithe and Radcliff—Footway Tunnel | London County Council | Engineer's Department, County Hall, Spring Gardens, S.W. |
| Feb. 1 | Cairo—Three Road Bridges over Nile | Ministry of Public Works | Commercial Intelligence Branch, Board of Trade, 50 Parliament Street, S.W. |
| | **FURNITURE:** | | |
| Oct 30 | Cardiff—Furniture and Bedding | Glamorgan Standing Joint. Com. | Chief Constable, Canton, Cardiff. |
| | **PAINTING AND PLUMBING:** | | |
| Oct. 29 | Warrington—Shower Baths | Town Hall, Park & Baths Com. | T. Longdin, Borough Engineer, Town Hall, Warrington. |
| Nov. 3 | Christiania—Linseed Oil and White Lead | Norwegian State Railways | Director, Engineering Department, Christiania. |
| | **ROADS AND CARTAGE:** | | |
| Oct. 29 | Gravesend—Materials | Town Council | C. E. Hatten, Town Clerk, Court House, Gravesend. |
| " 29 | Stockport—Street Works | Highways & Sewers Committee | J. Atkinson, Borough Surveyor, Stockport. |
| " 31 | Walmer, Kent Granite | Urban District Council | H. W. Barker, Surveyor, Walmer, Kent. |
| " 31 | Bexhill—Macadam | Corporation | G. Ball, Borough Surveyor, Town Hall, Bexhill. |
| " 31 | Leeds—Paving, &c. | City Council | City Engineer, Municipal Buildings, Leeds. |
| Nov. 2 | Hastings—Granite Kerb | Corporation | P. H. Palmer, Borough Engineer, Town Hall, Hastings. |
| " 2 | Prestwich, Manchester—Street Improvement Works | Urban District Council | Surveyor, Chester Bank, Prestwich, Manchester. |
| " 2 | Romford—Materials, &c. | Urban District Council | J. Turvey, Surveyor, Romford. |
| " 2 | Southampton—Materials | Corporation | J. A. Crowther, Borough Engineer, Market Chbrs, Southampton. |
| " 3 | Tottenham—Making-up Roads | Urban District Council | W. H. Prescott, Council Offices, 712 High Road, Tottenham |
| " 4 | Portsmouth—Brooms, &c. | Education Committee | J. J. Bascombe, Committee's Offices, Town Hall, Portsmouth. |
| " 4 | Godstone, Surrey—Making-up Roads | Rural District Council | J. George-Powell, Engineer, Godstone. |
| " 4 | Watford—Granite | Urban District Council | H. M. Turner, Clerk, Council Offices, Watford. |
| " 5 | Ealing, W.—Making-up Roads | Town Council | C. Jones, Borough Engineer, Town Hall, Ealing, W. |
| 1904.<br>Jan. 19 | Rotherhithe and Radcliffe—Carriageway | London County Council | Engineer's Department, County Hall, Spring Gardens, S.W. |

# Complete List of Contracts Open —*continued.*

| DATE OF DELIVERY. | WORK TO BE EXECUTED. | FOR WHOM. | FROM WHOM FORMS OF TENDERS MAY BE OBTAINED. |
|---|---|---|---|
| | **SANITARY:** | | |
| Oct. 29 | Basingstoke—Sewers | Works Committee | F. R. Phipps, Borough Surveyor, Town Hall, Basingstoke. |
| " 30 | Stapleford—Scavenging | Rural District Council | W. Fox, Clerk, Bank Chambers, Beast Market Hill, Nottingham. |
| " 30 | Hale, Cheshire—Removal of Nightsoil | Urban District Council | J. G. Whyatt, Clerk, Council Offices, Hale. |
| Nov. 3 | Portsmouth—Sewer, &c. | Town Council | Borough Engineer's Offices, Town Hall, Portsmouth. |
| " 3 | Tottenham, N.—Three Underground Conveniences | Urban District Council | W. H. Prescott, 712 High Road, Tottenham |
| " 5 | Nantwich—Removal of Nightsoil | Rural District Council | C. E. Speakman, Clerk, Union Offices, Nantwich. |
| " 7 | Hipperholme, Yorks—Sewers, &c. | Urban District Council | F. Massie, Tetley House, Kirkgate, Wakefield. |
| " 24 | Belper—Sewage Outfall Works | Urban District Council | C. J. Lomax, 37 Cross Street, Manchester. |
| " 25 | Wanstead—Scavenging, &c. | Urban District Council | Clerk, Council Offices, Wanstead, N.E. |
| | **TIMBER:** | | |
| Nov. 1 | Lisbon—Railway Sleepers | State Railways | Sessions Hall, Administrative Council of State Railways, Lisbon Portugal. |

# List of Competitions Open.

| DATE OF DELIVERY. | DESIGNS REQUIRED. | AMOUNT OF PREMIUM. | DEPOSIT REQUIRED FOR CONDITIONS, &C. | BY WHOM ADVERTISED. |
|---|---|---|---|---|
| Nov. 9 | Kilmarnock—Shops and Workmen's Dwellings | £15 15s., £10 10s. £5. 5s. | — | R. Blackwood, Burgh Surveyor, Market Bridge, Kilmarnock, Scotland. |
| " 9 | Skewen, Neath—Public Library | £10 10s. | — | S. Jones, Clerk, Old Road, Skewen, Neath. |
| " 14 | Tamworth—Public Library | £20, £10, £5 | — | J. Matthews, Town Clerk, Bolebridge Street, Tamworth. |
| " 21 | Sunderland—Additions & Alterations to Town Hall | £100, £50, £25. | £5. | J. W. Moncur, Borough Engineer, Town Hall, Sunderland. |
| " 30 | Bray—Pavilion and Winter Gardens | £30, £15, £10, and 3 prizes of £5 5s. each. | — | F. Bethell, E. Lee and P. MacDonnell, Hon. Secretaries, Town Hall, Bray. |
| Dec. 1 | Wakefield—Reconstruction of Cattle Market | £52 10s., £26 5s. | £2. | E. R. Langhorne, Clerk to Governors of Charities, Wakefield. |
| " 16 | Lambeth—Public Library | — | — | H. J. Smith, Clerk, Town Hall Kennington Green, S.E. |
| 1904. Mar. 31 | Vienna—Machinery to Lift Boats on Canal | 100,000, 75,000 & 50,000 kronen. | — | Austro-Hungarian Consulate-General, 22 Laurence Pountney Lane, E.C. |

# Tenders.

*Information from accredited sources should be sent to "The Editor" at latest by noon on Monday if intended for publication in the following Wednesday's issue. Results of Tenders cannot be accepted unless they contain the name of the Architect or Surveyor for the work.*

*Addressed postcards on which lists of tenders may be stated will be sent post free on application to the Manager,* BUILDERS' JOURNAL, 6, *Great New Street, Fetter Lane, E.C.*

**Aston (Birmingham).**—For the conversion of schools into an infirmary block for Aston Union Workhouse. Messrs. C. Whitwell & Son, architects, Birmingham:—

| | |
|---|---|
| J. E. Williams | £6,100 |
| Lee & Son | 5,199 |
| Dallow & Sons | 5,080 |
| W. S. Seamark | 5,060 |
| Elvins & Sons | 4,970 |
| T. Johnson | 4,927 |
| A. C. Hughes,* Stratford Building, Birmingham | 4,835 |

* Accepted.

**Bideford (North Devon).**—For the erection of municipal buildings and free library, for the Corporation. Mr. Alfred J. Dunn, A.R.I.B.A., architect, 86, Colmore Row, Birmingham, and 31, St. Michael's Square, Gloucester:—

| | | |
|---|---|---|
| Forse & Sons, Bristol | £9,195 | 0 |
| Woolaway & Sons, Barnstaple | 9,150 | 0 |
| J. Long & Sons, Bath | 7,999 | 0 |
| Hayward & Wooster, Bath | 7,857 | 0 |
| Smith & Pitt, Birmingham | 7,560 | 0 |
| Collins & Godfrey, Tewkesbury | 7,196 | 0 |
| Westcott, Austin & Co., Exeter | 6,700 | 0 |
| Ellis & Son, Bideford | 6,300 | 0 |
| H. Glover,* Bideford | 6,215 | 10 |

* Provisionally accepted.

**Croydon.**—For pair of proposed houses to be built in Temple Road, Croydon. Mr. Frank Windsor, architect, 1, High Street, Croydon:—

| | |
|---|---|
| J. Horrocks | £1,618 |
| D. W. Waller | 1,585 |
| D. W. Barker | 1,565 |
| E. J. Saunders | 1,480 |

**Hampstead.**—For new mahogany shop front and fittings, marble-work and electric lighting at 5, Frognal Parade, for J. Richards, Ltd. Mr. T. Wilson, architect, 34, New Bridge Street, E.C.:—

| | |
|---|---|
| I. Pugh* | £675 |

* Accepted.

**Hutton (Essex).**—Accepted for certain additions and alterations to "Cleveden," for Mr. Thomas W. Alderman. Mr. Robert H. Browne, architect, Brentwood, Essex:—

| | |
|---|---|
| Ernest Dix | £125 |

**Ingatestone (Essex).**—Accepted for certain alterations and additions to "The Cottage," Ingatestone, for Miss Caldecott. Mr. Robert H. Browne, architect, Brentwood, Essex:—

| | |
|---|---|
| W. Brock | £150 |

**Keswick, Norfolk.**—Accepted for work at Keswick Hall, Norfolk. Mr. Herbert J. Green, architect, 31, Castle Meadow, Norwich:—

J. S. Smith, Lakenham, Norwich.

**Levenshulme (Lancs.).**—For the erection and completion of the proposed Carnegie Free Library in Cromwell Grove and Barlow Road, for the Urban District Council. Mr. J. Jepson, surveyor, Guardian Chambers, Teviot Dale, Stockport:—

| | |
|---|---|
| W. Pownall, Stockport | £2,132 |
| A. Boon, Stockport | 2,060 |
| J. Briggs, Stockport | £2,058 |
| M. Lane, Stockport | 2,05[illegible] |
| T. & W. Meadows, Stockport | 2,050 |
| D. Eadie, Stockport | 2,050 |
| S. Warburton, Manchester | 2,000 |
| Burgess & Galt,* Ardwick, Manchester | 1,980 |

* Accepted.

**London N.W.**—For the erection of a new sorting office at Muswell Hill, for H.M. Office of Works, &c.:—

| | |
|---|---|
| N. Lidstone | £2,692 |
| W. Martin | 2,429 |
| J. Chessum & Sons | 2,329 |
| J. Willmott & Sons | 2,287 |
| Patman & Fotheringham, Ltd. | 2,233 |
| Pollard & Brand | 2,227 |
| General Builders, Ltd. | 2,177 |
| J. Ferguson & Co. | 2,139 |
| Voller & Goodfellow* | 1,960 |

* Accepted.

**Manchester.**—For the erection of a new warehouse, for Messrs. James Spicer & Sons, in Whitworth Street West. Quantities by Mr. J. Harold France, architect, 7, Chapel Walks, Manchester:—

| | |
|---|---|
| Brown & Sons | £13,853 |
| Young, Tinker & Young | 13,627 |
| Southern & Sons | 13,320 |
| Megarity & Co. | 13,264 |
| Wilson & Toft | 13,256 |
| R. Carlyle | 12,886 |
| Neill & Son* | 12,800 |

* Accepted. [All of Manchester.]

**Portsoy.**—For the erection of new buildings at Portsoy. Mr. R. B. Pratt, architect, Elgin:—

Mr. Gray, Portsoy.
W. Geddes & Son, Portessie.
H. J. Watson, Banff.
Mr. Strathdee, Portsoy.
John Rae, Portsoy.
George Fairweather, Portsoy.
£1,030

All accepted.

**Saltburn.**—For the erection of Wesleyan church at Saltburn. Messrs. Garside & Pennington, architects, Pontefract and Castleford:—

| | | | |
|---|---|---|---|
| T. E. Sugden | £8,750 | 0 | 0 |
| S. Coates, Middlesbrough | 8,470 | 0 | 0 |
| Watt Brothers, West Hartlepool | 8,222 | 12 | 1 |
| A. Moore, Scarborough | 8,079 | 0 | 0 |
| R. Harland, Whitby | 8,0[illegible]3 | 0 | 0 |
| H. Harwood, Darlington | 8,057 | 0 | 0 |
| W. S. France, Redcar | 7,972 | 13 | 0 |
| W. A. King, North Ormesby | 7,759 | 16 | 7 |
| Allison Brothers, Middlesbrough | 7,750 | 0 | 0 |
| J. & K. Ridsdale, Skelton-in-Cleveland | 7,727 | 14 | 4 |
| G. M. Rudge, Normanby | 7,687 | 0 | 0 |
| J. Allen & Son, Harrogate | 7,447 | 0 | 0 |
| T. Godfrey, Harrogate | 7,400 | 0 | 0 |
| T. Dickinson & Son,* West Hartlepool | 6,023 | 0 | 0 |

* Accepted.

**St. Budeaux (near Devonport).**—For providing and laying 12in., 10in. and 9in. sewers, with manholes, &c., at Crown Hill and Honicknowle, in the parish of St Budeaux, for the Plympton St. Mary Rural District Council. Mr. F. A. Clark, surveyor, 83, Old Town Street, Plymouth:—

| | | | |
|---|---|---|---|
| F. Stanbury, Devonport | £6,469 | 0 | 0 |
| S. Roberts, Plymouth | 5,546 | 0 | 0 |
| Davies, Ball & Co., Bromley | 5,350 | 0 | 0 |
| J. Shaddock, Plymouth | 5,339 | 0 | 0 |
| J. & S. Binns, Croydon | 5,297 | 0 | 0 |
| R. H. B. Neal, Plymouth | 5,240 | 0 | 0 |
| J. C. Ambrose, Plymouth | £5,200 | 0 | 0 |
| C. Duke, Plymouth | 5,075 | 0 | 0 |
| Pearce Brothers, Plymouth | 5,073 | 0 | 0 |
| T. Shaddock, Plymouth | 4,977 | 0 | 0 |
| A. N. Coles, Plymouth | 4,819 | 12 | 4 |
| H. J. Allen, Plymouth | 4,848 | 0 | 0 |
| G. H. Smith & Son, Devonport | 4,829 | 15 | 0 |
| M. Bridgeman, Paignton | 4,721 | 18 | 7 |
| C. J. Payne, Plymouth | 4,649 | 19 | 9 |
| W. C. Shaddock, Plymouth | 4,647 | 8 | 0 |
| W. J. Stevenson, Plymouth | 4,620 | 0 | 0 |
| E. Pike, Torquay | 4,412 | 0 | 0 |
| Steer & Pearce,* Plymouth | 4,092 | 18 | 3 |

* Accepted.

**Sheffield.**—For the erection of eight dwelling-houses, stabling, &c., in Coombe Road, Crookes, for Messrs. G. & J. W. Lister. Messrs. Hall & Fenton, architects and surveyors, 14, St. James Row, Sheffield. Quantities by the architects:—

| | | | |
|---|---|---|---|
| A. Bradbury | £3,344 | 0 | 0 |
| H. Watkinson | 3,048 | 10 | 0 |
| H. White, Sharrow | 3,037 | 0 | 0 |
| Roper & Sons, Broomhill | 2,900 | 0 | 9 |
| J. S. Teanby | 2,850 | 0 | 0 |
| M. A. Earl | 2,600 | 0 | 0 |
| R. Charlesworth, Hillsborough | 2,363 | 0 | 0 |
| W. Ainsley | 2,353 | 0 | 0 |
| G. Vaughan, Meersbrook | 2,350 | 0 | 0 |
| M. Hancock,* 71, Roebuck Road | 2,335 | 0 | 0 |

* Accepted.

**Shenfield (Essex).**—Accepted for the erection of a private residence for Mr. Harcourt Landon. Mr. Robert H. Browne, architect, Brentwood, Essex:—

| | |
|---|---|
| Ernest Dix | £850 |

**South Weald (Essex).**—For the erection of a convalescent home for children. Mr. Robert H. Browne, architect, Brentwood, Essex:—

| | |
|---|---|
| F. W. Jarvis | £847 |
| E. Dix | 805 |
| F. W. Burtwell* | 770 |

* Accepted.

**Sydenham.**—For alterations and additions to 138, Sydenham Road, for Mr. A. V. Zwanenberg. Mr. T. Wilson, architect, 34, New Bridge Street, E.C.:—

| | |
|---|---|
| Wheeler | £765 |
| Pugh | 715 |
| Speechley & Smith | 678 |
| Pratt* | 667 |

* Accepted.

**Watford.**—For the erection of an additional ward and isolation blocks, &c., at the Isolation Hospital, for the Watford Joint Hospital Board. Mr. C. P. Ayres, architect, Watford:—

| | |
|---|---|
| W. Parmenter, Braintree | £9,150 |
| Kellet & Sons, Ltd., Willesden | 8,865 |
| W. J. Bloxham, Banbury | 8,627 |
| Appleby & Sons, Lambeth | 8,565 |
| R. L. Tonge | 8,327 |
| J. Ferguson, Holborn | 8,[illegible]62 |
| Clifford & Gough | 7,999 |
| H. B. Watkins | 7,968 |
| Johnson & Son, Leicester | 7,899 |
| H. Martin, Northampton | 7,887 |
| G. & J. Waterman | 7,849 |
| G. Wiggs | 7,800 |
| H. Brown | 7,793 |
| Kerridge & Shaw, Cambridge | 7,777 |
| J. Darvill | 7,6[illegible]5 |
| Webster & Cannon, Aylesbury | 7,689 |
| C. Brightman | 7,440 |
| Clark Brothers* | 7,310 |

* Accepted. [Rest of Watford.]

**Advertisement Aphorism for the Week.**

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## Appointments Wanted.

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ARCHITECT'S ASSISTANT of 7 years' experience, with good references, desires engagement in good office. Salary 35s.—Architect, 43, Upper Gloucester Place, N.W.

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MACHINIST, young, wants JOB. Spindle, any planing machine, and saw bench; make cutters and sharp saws; town or country; state wages.— Machinist, 18, Lausanne Road, Peckham, S.E.

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# Bankruptcies.

[Abbreviations: R.O.—receiving order; P.E.—public examination; C.C.—county court; O.R.—official receiver Adj.—Adjudication.]

During the week ending Oct. 23rd nineteen failures in the building and timber trades in England and Wales were gazetted.

J. Ellis, surveyor, Charlton. R.O. Oct. 13th.

Lumley & Paine, builders, Dartford. R.O. Oct. 16th.

A. Book, builder, Colwyn Bay. Adj. Oct. 5th.

R. Crowe, draughtsman, Old Catton. R.O. Oct. 5th.

A. W. Martin, builder, Nottingham. R.O. Oct. 17th.

F. Fanta, engineer, High Holborn, London. Adj Oct. 10th.

A. Bell, joiner and builder, Hull. R.O. Oct 8th. P.E., Hull C.C., Nov. 16th, at 2.

E. Shellard, contractor, Filton, near Bristol. R.O. Oct. 5th. P.E., Bristol Guildhall, Nov. 6th, at 12.

J. Bullen, builder, Guildford. P.E., Guildford Town Hall, Nov. 3rd, at 1.

R. P. Bradley, draughtsman, Huddersfield. R.O. Oct. 8th. P.E., Huddersfield C.C., Nov. 16th, at 2.

J. Canny, joiner and builder, Sheffield. P E., Sheffield C.C., Oct. 29th, at 2.

Ames & Co., timber merchants, Birmingham. First meeting, 174, Corporation Street, Birmingham. Oct. 29th, at 11. P.E., Birmingham C.C., Nov. 26th, at 2.

D. Thomas & Son, builders and contractors, Cardiff. Liabilities expected to rank £3,891; assets £3,988; deficiency £903.

H. J. Cave, builder, Maida Vale, London, W. R.O. Oct. 5th. Adj. Oct. 8th. P.E., Bankruptcy Court, Nov. 11th, at 11.30. Liabilities £8,000.

F. G. Tebbutt, contractor's manager and builder's merchant, Hastings. Adj. Oct. 6th. P.E., Hastings Town Hall, Nov. 10th, at 12.

H. W. Leverett & Son, timber merchants and saw-mill proprietors, Ipswich. R.O. Oct. 17th

E. Hillman, builder and contractor, Laindon. R.O. and adj Oct. 15th.

A. Jenkins, builder and contractor Southwell. P.E., Nottingham C C., Nov. 6th, at 10.30.

F. Reeves, marble and granite merchant, Walworth. R O. and adj. Oct. 15th. P.E., Bankruptcy Court, Nov. 20th, at 11.30.

W. Stringer, builder, Hove. R.O. Oct. 14th. First meeting, O.R's. Brighton, Oct. 29th, at 10.45. P.E., Brighton C.C., Oct. 29th, at 11.

L. & A. H. Lowe, brick and tile manufacturers, Wollerton. R.O. Oct. 12th and adj. Oct. 17th. First meeting, Royal Hotel, Crewe. Oct. 3 th, at 10 45. P.E., Crewe Court Room, Oct. 30th, at 11.

# Coming Events.

## Wednesday, October 28.

Architectural Association.—Conversazione at the Royal Institute of Painters in Water Colours, Piccadilly, at 8 p.m.

Auctioneers' Institute of the United Kingdom.—Opening of Winter Session and inaugural Address by the President, at Hamilton House, Victoria Embankment, at 7.45 p.m.

Sanitary Institute (Lectures and Demonstrations for Sanitary Officers, Part I.).—Mr. W. H. Maxwell on "Sanitary Appliances." Inspection and Demonstration of Canal Boats arranged by Reginald Dudfield, at 7 p.m.

## Thursday, October 29.

Carpenters' Company (Lectures on Sanitary Building Construction).—Mr. H. D. Searles-Wood on "Site, Foundations and Sanitary Requirements of a Building." at 7.30 p.m.

Competition Reform Society.—General Meeting at 9, Conduit Street, W. Election of new Members to the Committee at 5.30 p.m.

## Friday, October 30.

Birmingham Architectural Association.—General Meeting. Mr. H. H. Statham, F.R.I.B.A., on "Organs," at 6 45 p.m.

## Saturday, October 31.

Sanitary Institute (Lectures and Demonstrations for Sanitary Officers, Part I.).—Inspection and Demonstration at a House in Stoke Newington, at 3 p.m.

Glasgow Technical College Scientific Society.—Prof. Alexander MacLay, B.Sc., M.I.M.E., on "The Evolution of a Technical College." at 7.30 p.m.

Institute of Sanitary Engineers.—Visit to view the System of Drainage and Ventilation at the Houses of Parliament, at 2 p.m.

## Monday, November 2.

The Surveyors' Institution.—Meeting of Elections Committee at 4 p.m.

Royal Institute of British Architects.—Opening Address of the Session by Mr. Aston Webb, R.A., president, at 8 p.m.

Sanitary Institute (Lectures and Demonstrations for Sanitary Officers, Part I.).—Mr. J. E. Worth, M.I.C.E., on "Water Supply," at 7 p.m.

## Tuesday, November 3.

Institution of Civil Engineers.—Inaugural Address by Sir William H. White, president. Presentation of the Council's Awards and Reception in the Library, at 8 p.m.

Sanitary Institute (Lectures and Demonstrations for Sanitary Officers, Part I).—Demonstration of Book-keeping as carried out in a Sanitary Inspector's Office, at the Public Health Office, Town Hall, Upper Islington, N., by Mr. James R. Leggatt, at 7 p.m.

## Wednesday, November 4.

Sanitary Institute (Lectures and Demonstrations for Sanitary Officers, Part I.).—Mr. J. E. Worth, M.I.C.E., on "Sewerage," at 7 p.m.

Architectural Association (Discussion Section).—Mr. H. Longden on "The Proper Treatment of Cast-iron," at 7.30 p m.

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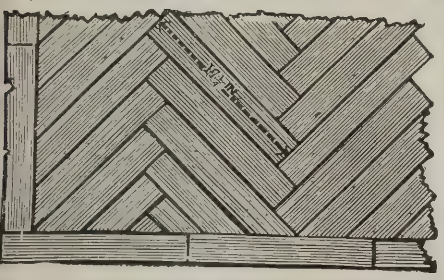

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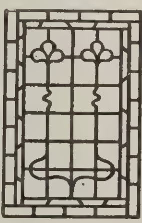

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# BUILDERS' JOURNAL

AND ARCHITECTURAL RECORD.

November 4, 1903. Vol. 18, No. 456. 6, Great New Street, Fetter Lane, E.C.

## Summary.

In the course of his presidential address to the Institute Mr. Aston Webb dealt with architects' registration, expressing himself to be opposed to it; he said it was bound to receive consideration, but acceptance was hardly likely to be obtained by putting a pistol to the head of the Institute and demanding registration or their life. Referring to architectural education, he said certain draft proposals had been made by a body of well-known architects, including Mr. Blomfield, Mr. Macartney, Professor Lethaby and Mr. Ricardo, advocating preliminary training in schools and workshops and a subsequent course in the office of a practising architect. The Institute appointed a committee to discuss the details. Mr. Webb said they hoped to secure the co-operation of the various teaching bodies in London, and to constitute a Board of Architectural Education. (Page 191.)

The new Gaiety Theatre provides accommodation for 1,326 persons. The stage is 40ft. deep and has an average width of 80ft. The three "circles" are of steel and concrete, the main girders being between 3ft. and 4ft. deep; the total weight of the "circles," when fully loaded, is estimated at 350 tons, which is transmitted to the foundations partly by the brick walls and partly by stanchions embedded in the brickwork. The dome, which is expected to be finished by the end of November, will be 40ft. in diameter, reaching to 90ft. above pavement level. There are 1,500 electric lights and 24 arc lamps on the stage, and 1,800 lights in the auditorium. (Page 182.)

Considerable objection from certain quarters has been made against the City Architect of Edinburgh carrying out the reconstruction of the Synod Hall in order to make it into a large place where the public may hear good music at cheap prices —for which the late Mr. Andrew Usher left £100,000. (This page.)

In a school having a central hall on ground and first floors, the extra sum sanctioned by the Board of Education should be reckoned for both at 15s. per ft. super. (Page 189.)

The L.C.C. Building Act Amendment Bill will not be introduced during the coming session. The City Corporation and the Council are at a deadlock about it. (This page.)

Blackfriars Bridge, now being re-painted, is generally regarded as a poor design: in 1872 its granite columns were described as being made to give shop room for the apple woman or a convenient platform for the suicide; its parapet "a fiddle-faddle of pretty cast-iron arcadry." The bridge which it replaced was designed by Mylne, who was bitterly opposed by Dr. Johnson, and also had considerable difficulty in obtaining his fees from the City authorities; though in the end he triumphed over his critics, as he was appointed surveyor to St. Paul's and was buried in the cathedral near Wren. (Page 186.)

**An Excellent Address.** In these days of hurry we have a suspicion that presidential addresses are not often read by those whom they concern, and, in truth, we are bound to admit that it is no uncommon thing to find them dull reading enough: but we heartily commend to our readers the excellent address which Mr. Aston Webb delivered to the Institute on Monday evening (reported on another page of this issue). We were glad that he abandoned the scrappy method of an annual chronicler, taking instead two main themes for his discourse—architects' registration and education—and dealing with them in a bold and definite manner. We have not the space now to go into either; opinions may differ on them, but we are sure all architects will be grateful for the clearness with which Mr. Webb expressed his views on so debatable a subject even as architects' registration. Presidents are so frightened about what they say, or are so over-conscious of their position, that hedging has become a time-honoured method with them. Mr. Webb is the more to be congratulated for his outspoken views.

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**A Scotch Imbroglio.** Seven years ago the late Mr. Andrew Usher offered the Edinburgh Town Council £100,000 to provide a large hall where the public might hear good music at popular prices. The gift was accepted. Then followed a Battle of the Sites, during which the Council, in desperation, got powers to acquire compulsorily the Atholl Crescent area; but the matter did not end there; the Council receded from their decision and finally settled on the Synod Hall—the old Edinburgh Theatre, built from the design of Sir James Gowans. The remodelling of this building to suit the requirements of the Usher Hall will mean the pulling down of the whole front, enlargements at the sides, and the reconstruction of the interior. Quite a controversy has arisen as to who should do the work; though, as a matter of fact, the Council accepted their committee's recommendation last week and the work will now be carried out by the City Architect's department. No end of personal feeling has been shown in the discussion, the inference being that the City Architect (Mr. R. Morton) is not the best man that might have been chosen—but more especially that the design should have been submitted for open competition. Well, our contemporary the "Scotsman" very quaintly observes that when Alexander the Great died he left seven generals, who were asked to vote for his successor: and each voted for himself!—"It is a weakness of the profession that there is only one real architect in it, but the difficulty is that no two agree who that one is." For our own part, we know very little of Mr. Morton's ability, though his design for the new municipal buildings at Edinburgh which we published some years ago was far better than what we generally get in open competitions; and in this connection we would recall the following facts:—The municipal buildings competition attracted fifty-six designs, but the successful competitors were not appointed to carry out the work. In 1896 a competition for "North Bridge Buildings" was held. Two "promising juniors" were placed first. The work was not proceeded with. In 1899 a competition for "Mid-Lothian County Buildings" was held. Two young architects were again first. The committee, acting under powers, entrusted the work to the architect placed fourth. Finally there has been the dog-in-the-manger policy of the Leith Parish Council. So that altogether the city has a bad enough record for open competitions, without risking another for the Usher Hall.

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**The L.B.A. Amendment Bill.** Though the London County Council do not intend to proceed with their Bill for the amendment of the Building Act during the forthcoming session of Parliament, suggestions are nevertheless being made to them from several sources — more especially the Drapers' Chamber and the London Chamber of Commerce, both of which are anxious to avoid the over-drastic proposals embodied in the original Bill, which, as everyone knows, was a piece of panic legislation. The City Corporation, however, are at a deadlock with the Council about the matter. They wish the Council to let them see the draft of the new Bill: but the Council does not agree to this, desiring the Corporation to submit their proposals for consideration. There the matter rests at present. We trust, however, that some arrangement will be arrived at between these two bodies, each of which can be of the greatest help to the other.

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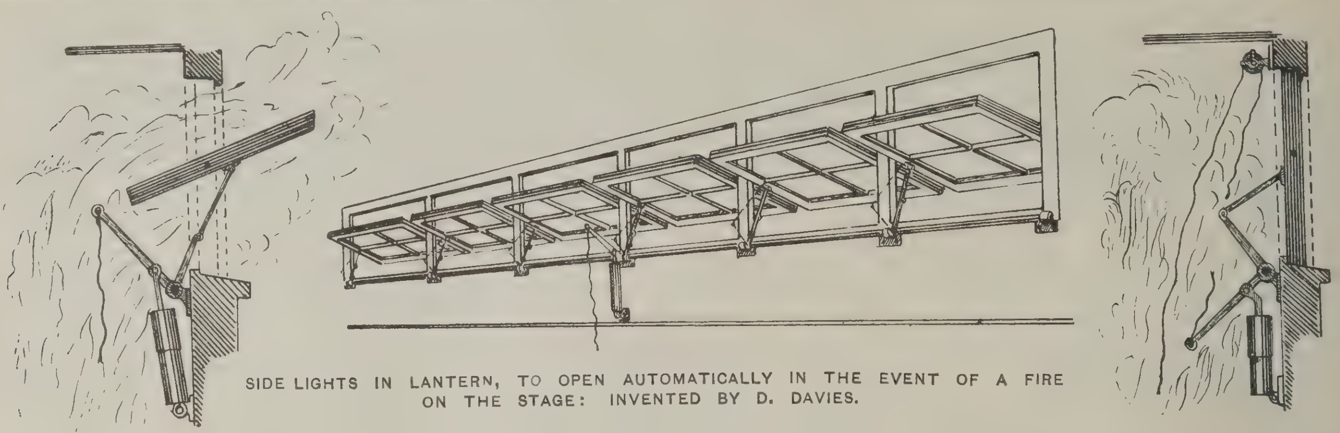
**Bridge of Ayr in Danger.** Mr. James A. Morris, F.R.I.B.A., has been calling attention to the precarious condition of the old bridge of Ayr. He is afraid—and for good reasons—that if some steps are not taken immediately by the authorities for its necessary repair it will before long share the fate of the Campanile at Venice. This would indeed be an irreparable loss, for the bridge has not only the literary associations that have made it known far and wide, but great architectural and pictorial beauty as well. It dates from the thirteenth century, Mr. Morris says. There are few of these old bridges left now.



SIDE LIGHTS IN LANTERN, TO OPEN AUTOMATICALLY IN THE EVENT OF A FIRE ON THE STAGE: INVENTED BY D. DAVIES.

# THE NEW GAIETY THEATRE.

THE new Gaiety Theatre in the Strand has attracted more general interest than any other building erected in London during recent years. The site is at the western corner of the "island" left between the Strand and Aldwych, which branches right and left at the end of the new street that is being made straight down from Holborn. The site consists of 12,800 sq. ft., as against the 11,200 sq. ft. upon which the old theatre stood: it has a frontage of 97ft. 6in. to the Strand, a corner frontage of 40ft. and a frontage to Aldwych of 138ft. 6in., both thoroughfares being 100ft. wide at that part. The architects are Messrs. Ernest Runtz and George McLean Ford, who designed not only the general structure, but the whole of the decorative work and upholstery.

It had first been settled that a minimum sum of £50,000 should be spent on the building, and the perspective hung at the Academy in 1901 showed a treatment in red brick and Portland stone. So far as the theatre was concerned, it would not have been advantageous to carry it up the full height of 80ft. permitted by the Building Act, but for the hotel which adjoins it this was obviously desirable. The Council did not approve of the difference in the heights of the two buildings, and were of opinion, moreover, that the exterior should be of a more costly character, and the design more elaborate. The architects were accordingly instructed to send in an amended design. But before this was done the eight architects invited by the Council submitted their designs, though, as everyone knows, the work was quite fruitless. A deadlock followed, which was ultimately solved by Messrs. Runtz (with the consent of the Council) approaching Mr. Norman Shaw, who prepared sketch designs for the exterior from which the working drawings of the building, as now executed, were made.

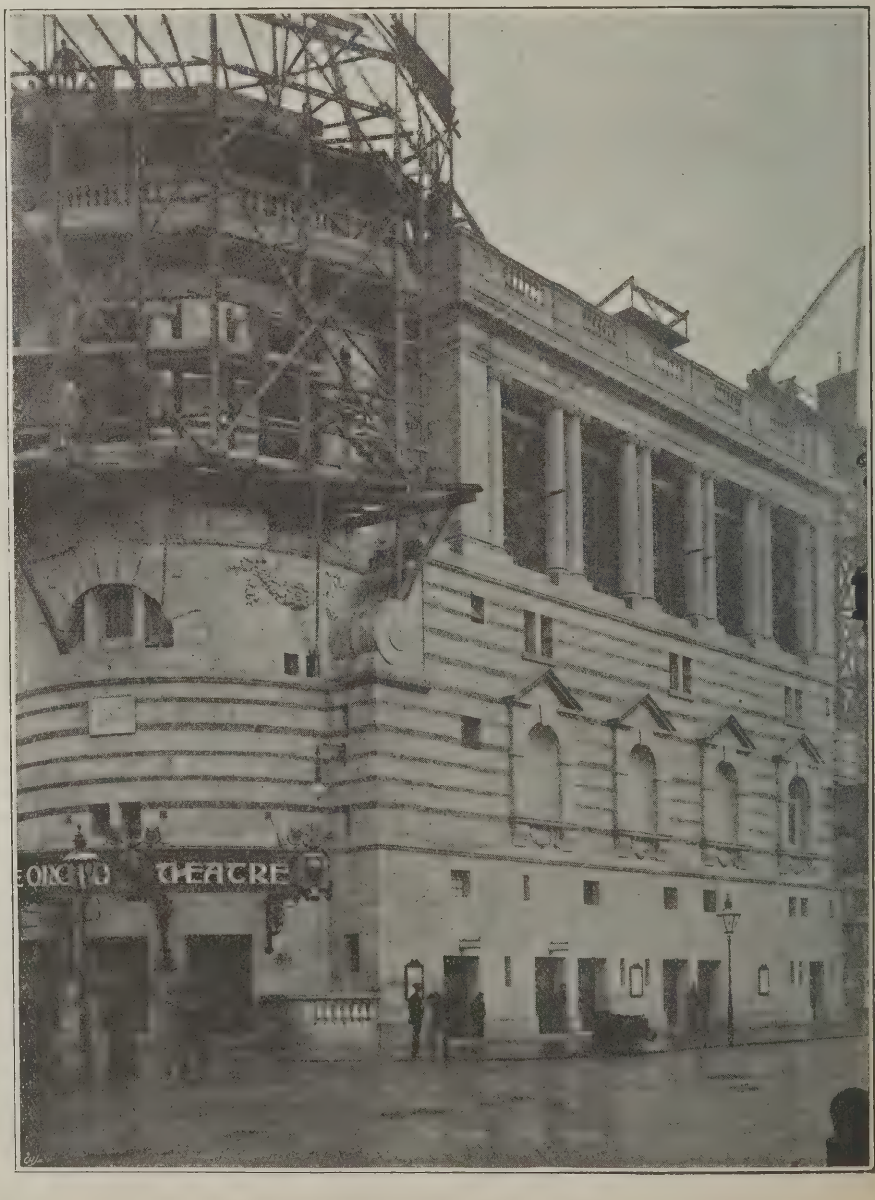
Pending the settlement as to the elevation, an entirely new set of theatre regulations had been passed by the Council, still further complicating matters: while later, other new regulations as to electric installations in theatres were passed by the Council, thus making further revisions in sub-contracts necessary. It may be mentioned that under the new theatre regulations no projection must extend beyond 1in. of the wall-surface of any corridor or staircase: structural decorative treatment is therefore made a thing of the past.

The main entrance hall or crush-room is at the corner of the site. From it staircases lead up right and left to the grand circle "back." Below the crush-room is the stalls saloon and above it are the saloons to the grand circle, balcony and gallery, all following the lines of the crush-room and being either circular or oval on plan. A special feature has been made of retiring-rooms or lounges to the private boxes of the stalls and grand-circle tiers; those to the latter on the O.P. side become the royal retiring-rooms, with a separate entrance from Aldwych.

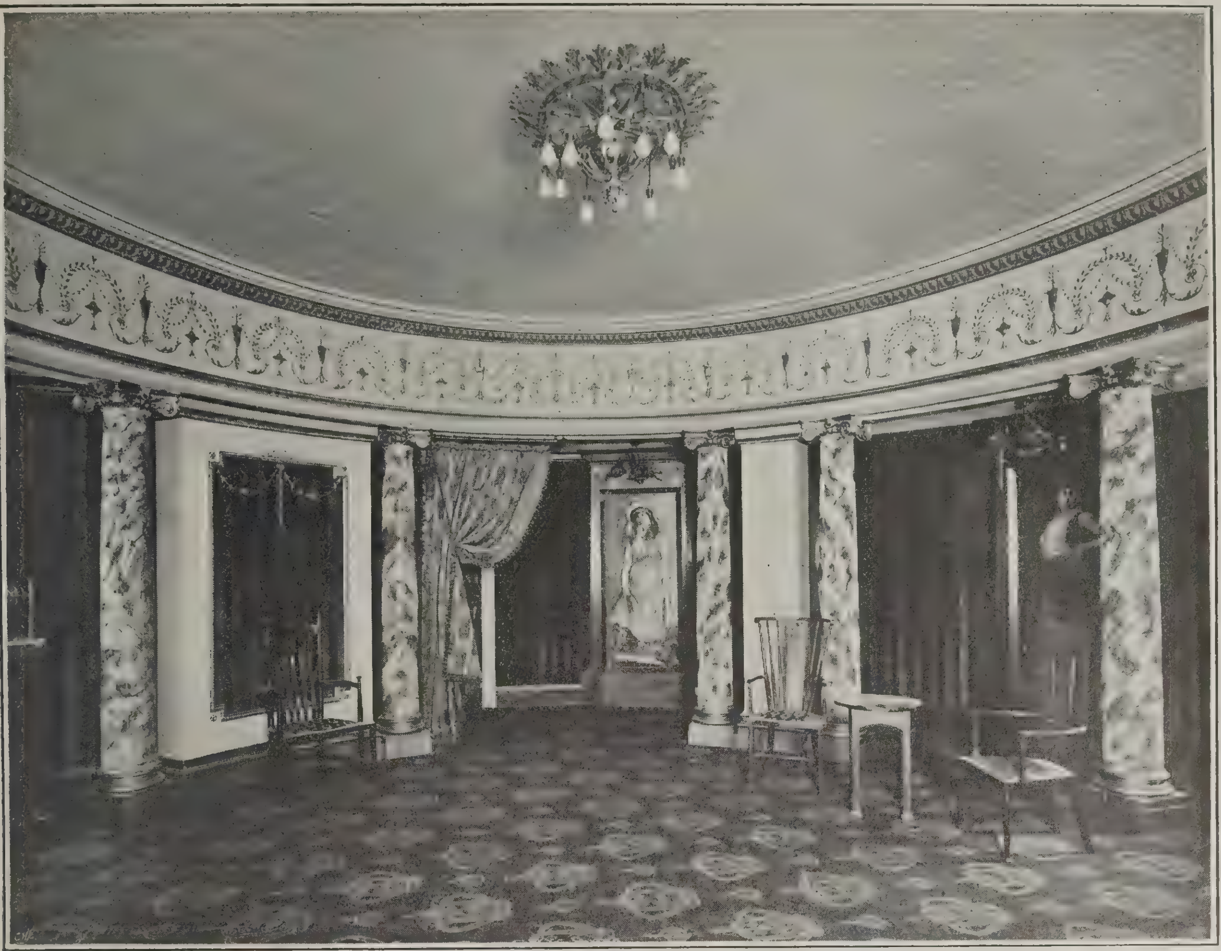
The theatre is a "three-tier house," and the seating accommodation is approximately as follows:—Gallery 400, upper circle 260, dress circle 172, stalls 146, pit 300, private boxes 48; making a total of 1,326. The auditorium is 60ft. wide by 64ft. deep.

The proscenium is 30ft. wide by 36ft. 6in. high. The stage is 40ft. deep and of an average width of 80ft., with a mezzanine floor above and cellar below. There are twenty-nine dressing-rooms. The gridiron is 70ft. above the stage. In case of fire the side lights in the lantern in the roof would be automatically pulled open by springs, and the flames allowed to be carried outside. Normally these lights are held closed by a hempen cord; when that is burnt through the lights fly open. This device is the invention of Mr. D. Davies, clerk of the works.

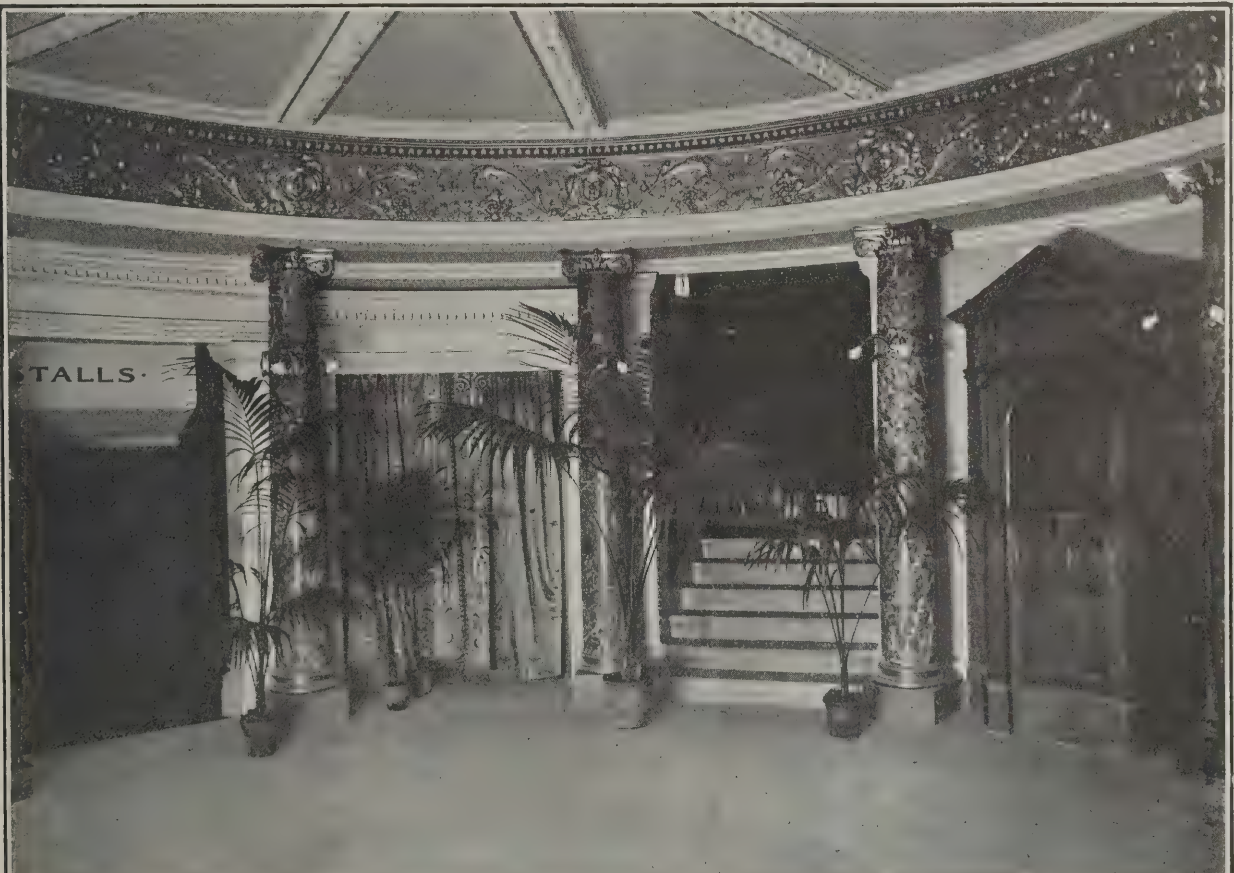
A prominent feature of the exterior is the open colonnade of Ionic columns at the top of the building, approached by two staircases from the gallery level; but the



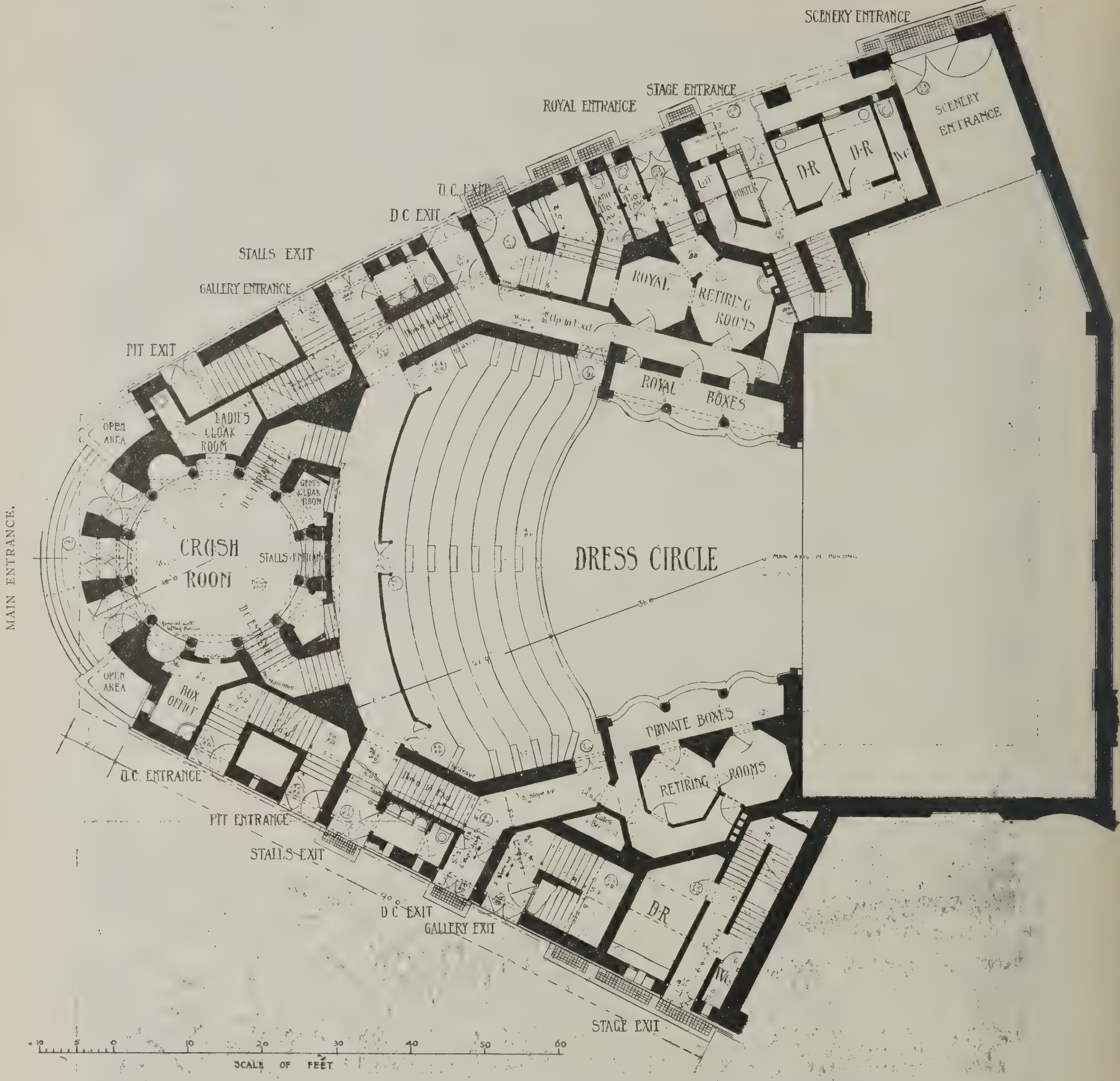
NEW GAIETY THEATRE: STRAND FRONT.



FOYER, FOR DRESS AND UPPER CIRCLES (*Photograph by Campbell and Gray.*)



ENTRANCE HALL (CRUSH ROOM). (*Photograph by Foulsham and Banfield.*)



NEW GAIETY THEATRE: DRESS-CIRCLE PLAN. ERNEST RUNTZ AND FORD, ARCHITECTS.

dome crowning the corner will of course be the main feature of the entire building; it will be 40ft. in diameter and 90ft. above pavement level, supported by seven pairs of consoles and surmounted by a figure 17ft. high, by Mr. Hibbert Binney. This part, it is anticipated, will be complete by the end of November. The internal dome will be of steel and concrete and the external one of steel and wood, covered with copper.

The whole of the façades are in Portland stone with bands of Verd Antique marble.

Throughout the theatre the construction is as fireproof as possible, consisting for the most part of cement, greystone and blue-lias lime, brickwork and steel, with concrete floors and roof. The floors are almost entirely finished in cement, and the roofs of the auditorium with a double layer of asphalt. The steps throughout are Granolithic.

The constructional steelwork of the tiers, roofs and dome has been executed by Messrs. Dennett & Ingle, engineers. The circles are constructed in steel and concrete throughout, and are so designed as to carry from wall to wall of auditorium without intermediate supports. The main girders vary from 3ft. to 4ft. in depth, and support lighter-shaped girders through which cantilevers project 12ft. to 15ft. to the front of the circles. The cantilevers are built up with steel plates and angles, and the larger ones have a depth of 2ft. at the fulcrum. The total weight of the three circles when fully loaded is estimated at about 350 tons, and this weight is transmitted to the foundations partly by the brick walls and partly by cast-iron and steel stanchions embedded in the brickwork. The stepped surface of the circle is formed in concrete upon steel bearers spaced from 2ft. to 3ft. apart, and the ceilings are constructed with metal lathing suspended below the girders and cantilevers, and at such a level as to permit an unbroken soffit and a clear height of not less than 8ft. from circle to ceiling.

The dome is placed partly over the auditorium, and is carried upon steel girders at roof level. The two main girders support loads of 200 tons and 120 tons respectively. The ends of the larger of the two girders come over openings in the auditorium wall, and are supported by twin riveted girders, and the weight is eventually transmitted to the foundations by means of cast-iron stanchions built in the wall. The total weight of the tower portion of the building is estimated to be about 1,700 tons at its base, inclusive of the loads supported upon girders and stanchions.

To cope with an outbreak of fire, a complete system of high-pressure fire mains and hydrants has been installed by Messrs. Merryweather & Sons, Ltd., both in the auditorium and behind the scenes. In addition, the proscenium is fitted with an improved double thickness asbestos fire-resisting curtain, with patent slip gear at the stage level and at the stage door, as demanded by the London County Council, as well as the usual raising and lowering gear and counter-balance weights. Provision is also made for cooling the curtain by means of a specially-designed sprinkler, controlled from the stage level.

The system of ventilation and heating has been carried out by Messrs. James Stott & Co, Ltd. The air supply is at the roof line, one intake for the auditorium and another for the stage. Immediately after leaving each intake the air is passed through a patent revolving air screen, the function of which is to arrest dust, smuts and any suspended matter. Having gone through the screen the air is driven forward by a disc propeller, and passed through heating pipes formed of certain standard lengths with special gills or fins arranged radially at certain distances. The air now being washed and warmed, is passed into a short main duct over the ceiling, and finally enters the auditorium through openings in the fibrous plaster decorations. For the gallery a special fresh-air trunk leads into the roof from the fan-chamber. The stage portion is arranged on similar lines, fresh air being admitted above after being suitably warmed and purified.

The temperature is completely under control, the heating batteries being furnished with sliding valves.

For the outlet, special flues run from the pit level and the stage floor to the roof, and on the various circles connection is made with these foul-air flues at floor level. Heating is by means of a low-pressure steam boiler in the basement, from which the mains are led to the batteries in the roof.

All condensation is returned to the boiler, and after the performance is over steam can be shut off and all heat confined to the boiler instead of being transmitted for hours when not required through walls of the heating medium, as would be the case with hot-water pipes.

In designing the electric-light installation every precaution was taken to minimize the risk of a total extinction through failure of supply. Throughout the theatre the lamps are arranged alternately on two circuits, these being connected through the switches to two absolutely independent sources of supply, while as a further protection a number of "police lights" are being installed, connected to a third independent system of supply. In the event of the first two supplies failing, there will thus be sufficient illumination for the public to leave the building in safety. These "police lights" will be used during the daytime for cleaning purposes.

The stage is fitted on the three-colour system, and the arrangements for regulating the lighting comprise fifty-seven regulators, which is the largest number in use at any theatre in this country.

Altogether $22\frac{1}{2}$ miles of wire and cables have been laid in the theatre, and over five miles of steel tubing, besides many thousand feet of casing. There are more than 1,500 incandescent lights on the stage alone, as well as twenty-four arc lamps for limelight purposes, and about 1,800 lights in the house. The various devices used are claimed to be the most ingenious and up-to-date of any theatre in the world. The whole of the work is being carried out by Messrs. Roger Dawson, Ltd., to the specification of the consulting engineer, Mr. Thomas J. Digby.

The auditorium is flanked by twelve private boxes, with arched loggia over, forming also a constructional feature in carrying the novel vaulted ceiling with its squinch arch treatment, trumpet-like in general formation, for acoustic purposes, and embellished with bold winged figures and modelling by Mr. W. J. Neatby, and three decorative tympanum panels in oils by Mr. Charles Buchel representing Aladdin journeying with his magnificent retinue from his old to his new palace (see p. 186). Upon either side of this arched opening and in the spandrels are two niches containing coloured figure-subjects of "Music" and "Dancing" by Mr. Hibbert Binney.

The divisions of the ceiling over the auditorium are embellished with shells, masks and swags. The circle fronts are of modelled plaster, principally by Mr. Sidney Webb.

The mural decorations consist of a material by Rottmans, having a ground work, as seen by artificial light, of old rose, with a raised "art nouveau" design in gold, cerulean blue, Hooker's green and permanent red being sparingly introduced.

The decorative plasterwork throughout is by Messrs. George Jackson & Sons, of Rathbone Place, harmoniously treated with the above scheme.

The retiring-rooms in the rear of the boxes are in contrast to the auditorium; the Royal rooms are in the Adam style, with modelled frieze, ceilings and panelled walls.

The crush-room is in the Georgian style, with marble columns, bronze caps and bases supporting a modelled entablature and frieze; the floor is of marble mosaic.

The foyer is treated in hardwood, the panels being occupied by full-length portraits of the following Gaiety favourites:—Nelly Farren, Kate Vaughan, Letty Lind, Sylvia Grey and Ellaline Terriss. The frieze above is richly gilded, and the modelled ceiling entirely in ivory white.

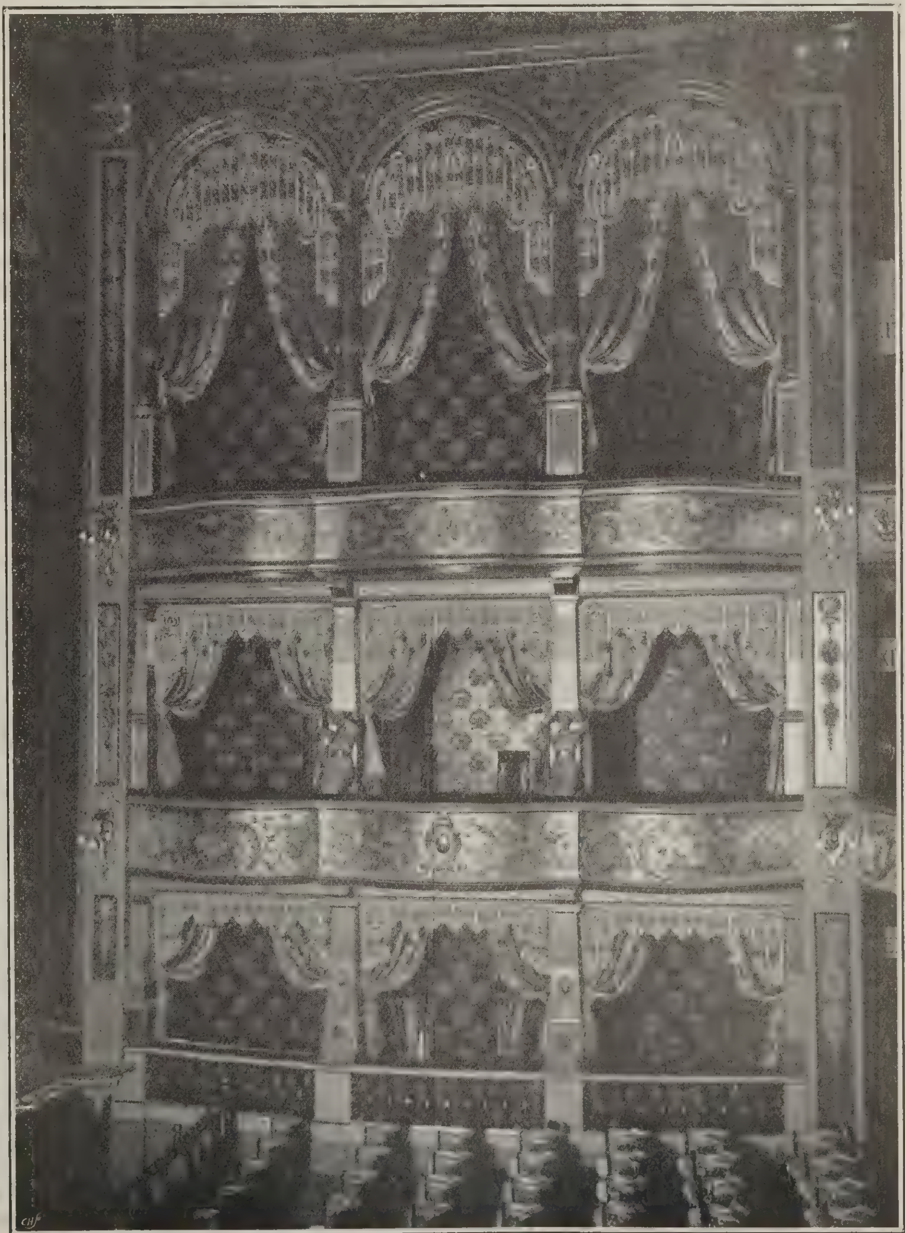
Messrs. George Wragge, Ltd., of the Wardry Art Metal Works, Chapel Street, Salford, near Manchester, supplied special cast-bronze name plates for the main doors.

The whole of the decorations of the building have been carried out by Mr. Edward Bell, in accordance with the specification of the architects.

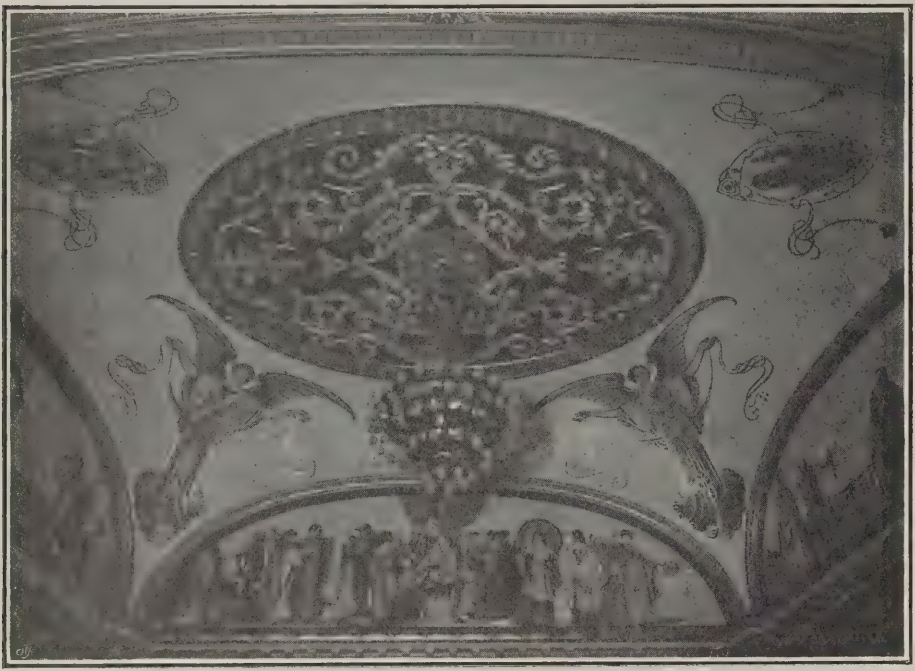
All the doors throughout the building are fitted with the well-known and convenient Yale locks, supplied by the company of the same name.

The contractor is Mr. Henry Lovatt, of London and Wolverhampton. Mr. Lovatt's foreman on the job is Mr. Bassett. The clerk of works is Mr. D. Davies, who occupied a similar position at the Adelphi, Apollo and Wyndham's theatres.

The upholstery and general furnishing has been done by Messrs. James Shoolbred & Co. The crush-room has an exceptionally thick red carpet, rich in quality and colour, and the staircases and corridors are covered with a soft velvety Axminster carpet in artistic shades of green; this carpet also covers the floors of the stalls, dress and upper circles, and saloons, and forms a most agreeable foundation for the general colour scheme of the auditorium. The seats are a distinct departure, conveying the impression of drawing-room easy-chairs, with polished mahogany frames inlaid with satin wood, into which the numbers are introduced.



BOXES ON PROMPT SIDE. *(Photograph by Foulsham and Banfield.)*



DETAIL OF CEILING, WITH TYMPANUM PAINTINGS BY CHARLES BUCHEL.
*(Photograph by Foulsham and Banfield.)*

They have been specially designed and patented by the architects. The covering is of English-made silk brocade, having a white design on a ground of green in harmony with the carpet. At the back of each chair are two shelves, the upper for fan or opera-glass and the lower for a hat. The orchestra and boxes are hung with green satin (also of English manufacture) in various shades of silks and needlework, richly trimmed with fringe and tassels. In the Royal suite the floors are covered with carpets of superior texture, with inlaid satinwood furniture, the drapings and furniture coverings being of heliotrope silk specially woven by Messrs. Shoolbred for the purpose.

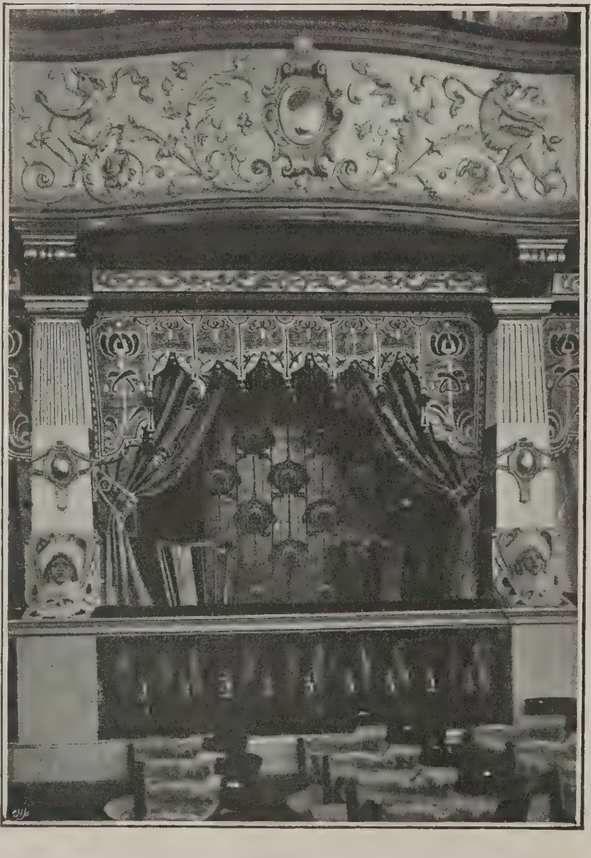
The main entrance portico or covered way has been made and erected by Messrs. Keeling, Teale & Co., of Ravenscourt Square, W., in whose London workshops all the constructional work has been carried out. It consists of a hipped roof of novel design to eliminate the possibility of any rainwater dripping from an overflowed gutter, and is glazed with rolled cast sheet-glass. It projects 12ft. from the face of the building, and is supported by four heavy steel cantilevers resting on forged-iron brackets having repoussé copper shields and delicate leafwork. The fascia is a 45ft. segment of a curve following that of the main front, with a design in coloured and leaded glass carrying the names of the play and theatre, framed in hand-wrought tracery panels of leaves and branches and surmounted by beaten copper plaques showing flights of birds and garlands of flowers. To ensure accuracy, the whole of the constructional work was first erected in Messrs. Keeling, Teale & Co.'s works, disconnected for carriage, then re-erected in its present position.

The sanitary fittings have been supplied by Messrs. Doulton & Co., Ltd., of Lambeth. The Royal retiring-rooms are fitted with white Queensware "Simplicitas" pedestal wash-down closets with slop top, enclosed in panelled walnut, with high panelled skirting at back and sides 1ft. 10in. deep. The cistern is Messrs. Doulton's well-known "Paisley" having a panelled casing, with polished walnut pipe casing, and silver-plated chain pull. Highly-finished angle cabinet lavatories are also provided.

Mr. George Edwardes's room is fitted with a special lavatory having polished St. Ann's marble top and skirting, white earthenware oval basin with combined soap traps recessed for waste and overflow, hot and cold valves and waste, and vitreous enamelled cast-iron frieze and supports. Also a parallel cast-iron bath with wide roll edge and ornamental feet, white vitreous enamelled inside and on roll, metallic enamelled outside, with gold decoration, combined fittings for hot, cold and waste, porcelain soap plate, and special spray arrangement connected under soap tray. The floor under lavatory and bath is of polished white veined marble.

The urinals for the stalls have fireclay semi-circular backs (backs and bases being in one piece), white-glazed jambs and special designed tops, brass spreaders, glazed channels and galvanized gratings and frames.

The urinals for the upper circle, gallery, pit and basement consist of special strong salt-glazed stoneware semi-circular backs and bases in one piece, with stoneware jambs, slate tops and skirtings, brass spreaders, glazed channel and galvanized gratings.



DETAIL OF BOX. *(Photograph by Foulsham and Banfield.)*

# OLD AND NEW BLACKFRIARS BRIDGE.

THE repainting of Blackfriars Bridge has revived the statement that the old bridge crossing the Thames at this part was dedicated to the memory of Mr. William Pitt, and that for a short time it was known as Pitt Bridge. Only a comparatively few people living ever heard the name of Pitt associated with it (says the "City Press"), and thereby hangs a tale which may be retold.

### Mylne and Dr. Johnson.

Old Blackfriars Bridge was commenced in 1760, some time after the completion of old Westminster Bridge. To the surprise and chagrin of many people in the City, the designs of a young Scotchman named Mylne, whose family it was said had been master-masons for a period of 500 years, were accepted. Mylne, who had been studying architecture in Rome, had his own ideas on bridge-building, and they did not coincide with those of some rivals, whose claims to superior ability were long and loudly voiced by Dr. Johnson. Portland stone entered largely into the construction of Mylne's bridge, which consisted of nine semi-elliptical arches, the centre one being 100ft. wide, while the total length of the structure was nearly 1,000ft. by 45ft. wide. The result of this difference of opinion on the subject of bridge-building led to a long and bitter literary controversy, into which Dr. Johnson threw himself with his customary vigour. The rival claims of semi-circular or semi-oval arches were discussed.

Then the question whether iron railings were more artistic than stone balustrades was made a bone of contention. Dr. Johnson wrote letters to the "Gazetteer" in favour of his friend Gwynn, who was Mylne's opponent.

Old Blackfriars Bridge was built in spite of the adverse critics, and the actual structure cost £152,642, or £163 below the estimate. Mylne received £500 a year and 10 per cent. on the expenditure. The claim was, however, disputed, and the justice of the designer's demand was not admitted by the City until 1776. Mylne triumphed over his critics, as he was appointed surveyor to St. Paul's Cathedral, and was buried in the cathedral near Sir Christopher Wren.

Pitt's relation to the bridge is mainly concerned with a tin plate bearing a Latin inscription highly eulogistic of himself, then Prime Minister, which was among the articles deposited within the foundation-stone. But in process of time the popular enthusiasm for Pitt evaporated, and almost imperceptibly the name of the bridge reverted to the association of the Blackfriars or Dominicans, whose beautiful monastery was formerly situated on the approach to the bridge from the City's side.

### £100,000 for Repairs.

As time went on the bridge began to show signs of decay, for in 1833 more than £100,000 was expended on works of restoration, while between 1840 and 1855 the sum of £74,000 was spent in repairing the bridge, which was finally spoiled by the cornices and the balustrades being removed. In 1843 the Chamberlain reported to the Court of Common Council that £100,000 had been expended in repairing the structure, while £10,200 was spent during six years in repairing one arch alone.

These reports sounded the death knell of the old bridge, and the Corporation decided to replace it by a new one—the present one, which was designed by Joseph Cubitt. Twelve designs were sent in, and, strange to say, among the competitors was a Mr. Mylne, a grandson of Dr. Johnson's old enemy. The axis of the new bridge coincides exactly with that of the old one, but the roadway over the central arch is only a little more than 10ft. above the banks on either side of the river, or but half the rise of the old bridge. The gradient of the ancient structure was about 1 in 16, afterwards reduced to 1 in 24. The gradient of the present bridge is 1 in 40. Conspicuous features are the polished red granite columns, which weigh 30 tons each and are 11ft. in height. The total cost of the structure was £400,000.

### A Criticism of the Present Bridge.

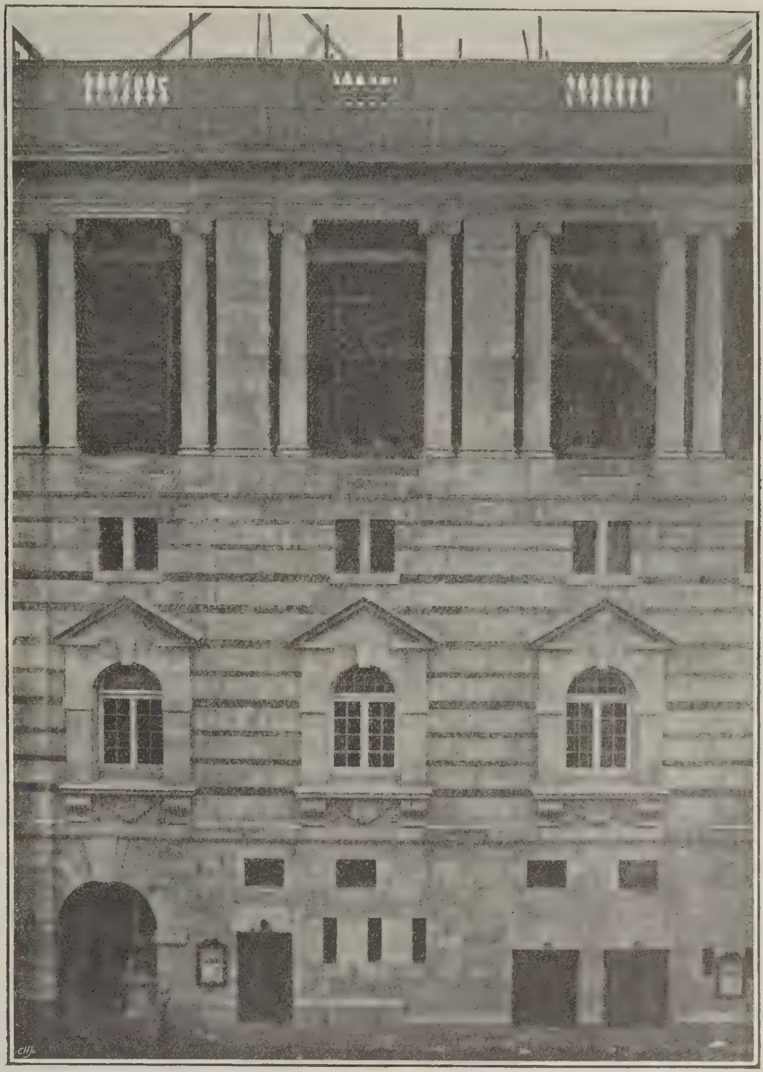
The bridge is generally regarded by architects now as a poor design, and that opinion found expression in 1872, when the "Quarterly Review" observed: "With Blackfriars Bridge we find the public thoroughly well pleased, though the design is really a wonder of depravity. The polished granite columns of amazing thickness, with carved capitals of stupendous weight, are made to give shop room for the apple woman, or a convenient platform for the suicide. The parapet is a fiddle-faddle of pretty cast-iron arcadry, out of scale with the columns, incongruous with the capitals, and unsuited for a work that should be simply grand in its usefulness; and at each corner of the bridge is a huge block of masonry apropos of nothing—a well-known evidence of desperate imbecility."

## Builders' Notes.

**A new Street** 40ft. wide is to be formed across the site of Christ's Hospital from Giltspur Street to King Edward Street.

**Building Act Amendment.**—The L.C.C. Bill for the amendment of the London Building Act will not be introduced into Parliament this next session.

**Subways for Mains.**—The Westminster City Council have passed a resolution inviting the L.C.C. to share the cost of the construction of a further length of subway for the reception of gas, water, electric and other mains from Northumberland Avenue to a point opposite Morley's Hotel in Trafalgar Square. It was pointed out by the city engineer that the present excavations for the Trafalgar Square station of the Waterloo and Baker Street Railway presented an opportune moment for the work. The Council have at present a subway of this kind along Northumberland Avenue, and the new one would link this with the Shaftesbury Avenue, Piccadilly Circus, Oxford Street and Embankment subways, with the exception of a short link from Morley's Hotel to St. Martin's Church. It may be mentioned that in connection with the Trafalgar Square station there will be a foot subway joining the station subways on each side of the Strand, so that pedestrians will be able to cross the Strand at that point, below ground.



NEW GAIETY THEATRE: FRONT TO ALDWYCH.

**The Glanadda Schools, Bangor, North Wales,** are being warmed and ventilated by means of Shorland's patent Manchester stoves and grates, the same being supplied by Messrs. E. H. Shorland & Brother, of Manchester.

**Newtown Free Library, Montgomery,** has recently been fitted with the latest improved hot water heating apparatus by Messrs. John King, Ltd., engineers, Liverpool, who employed their own well-known "Rahnee" radiators.

**A Furniture Sale.**—The persistent growth of Messrs. Oetzmann & Co.'s business having once more necessitated an extension of their premises at 62–79, Hampstead Road, W., they are holding a great clearance sale at great reductions of prices in every department. Purchases can be made, if desired, on the deferred payment system. Messrs. Oetzmann send free a special sale catalogue.

**A Proposed Builders' Association at Llandudno.**—A meeting of local employers connected with the building trade was held recently to consider the desirability of forming an employers' association for Llandudno. A resolution was unanimously adopted to the effect that an association was both desirable and essential, and that efforts should be made to form one. Steps are now being taken to do so. Messrs. Knox, Hassal, Dodd & Co., of Llandudno and Liverpool, are the secretaries to the National Association of Builders.

**Junior Institution of Engineers.** — The annual general meeting of this Institution was held on October 24th. The report stated that the total membership was now 746. The Institution premium has been awarded to Mr. R. W. Newman, A.M.I.C.E., for his paper on "The Effect of Design on Methods of Construction from a Contractor's Point of View" (published in THE BUILDERS' JOURNAL for May 6th and 13th last). The accounts showed that the sum of £300 had been invested, and that the income had been £156 more than the expenditure. The elections resulted as follows:—Chairman, Mr. S. Cutler, junr.; vice-chairman, Mr. Adam Hunter; members of council, Messrs. J. N. Boot, W. H. De Ritter, A. H. Huddart and J. H. Pearson; provincial members of council: Messrs. V. H. Chabot, T. D. Evans, E. King, W. E. Lilly, F. S. Pilling and E. W. Porter. The new president is Mr. J. Fletcher Moulton. The secretary is Mr. W. T. Dunn, 39, Victoria Street, Westminster.

**Cost of School Buildings.**—At a meeting of the London School Board Sir Charles Elliott congratulated the committee on the reduction in the cost of school building. In 1901 the cost was £20 per place; in 1902 it was £16; and two buildings had only cost them £13 per place. But new buildings now to be erected would work out as low as £12 11s. per school place.

# Bricks and Mortar.

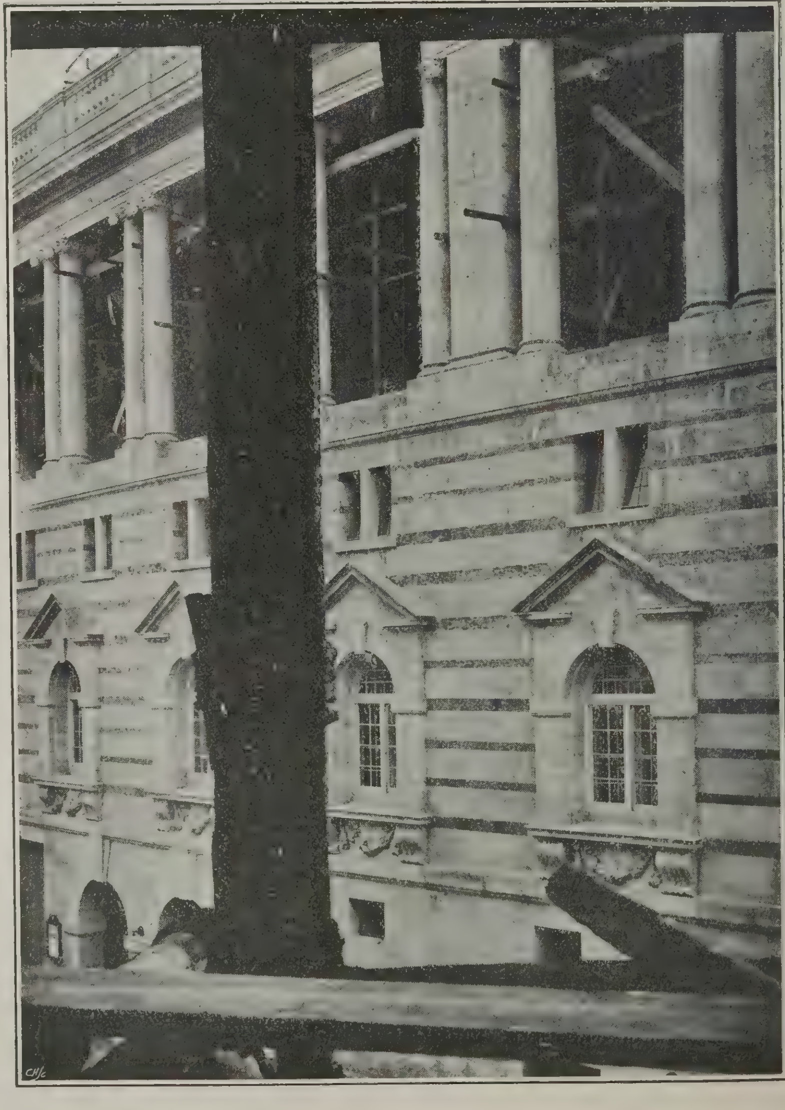
**Aphorism for the Week.**

*Suggestion, never depiction.*—James McNeill Whistler.

**Our Plates.** The staircase at Lloyd's Registry in Fenchurch Street (Mr. T. E. Collcutt, F.R.I.B.A., architect) is carried out in fine marbles; it leads to a domed landing lined with marble and having a frieze around, by Mr. Lynn Jenkins, carried out in copper, ivory and mother-of-pearl.—Dunkeld Cathedral dates from the beginning of the fifteenth century. The choir was renewed about 1800, and is the part now used for public worship. The side aisles are 12ft. wide; the north aisle has been vaulted, and the tracery in most of the windows there still remains; it is of good design, being of the kind common in Scotch architecture of the fifteenth century. The measured drawing reproduced is by Mr. William Simpson, of Perth.—The village of Bottisham is situated midway between Newmarket and Cambridge. The screen, in the south aisle of the church, surrounding the tomb of Leonittus and Dorothea, children of Elizabeth and William Allington, 1658, is executed in oak, and is of the Decorated period. There is also at the side of the screen an altar tomb of Purbeck marble with the matrix of a brass effigy, relieved by shields. The inscription on the margin, now lost, commemorated Elyas de Beckingham, 1285. The measured drawing reproduced is by Mr. Cecil G. Rayner, of Newmarket.

**Frosterley Marble.** Speaking broadly, there are but few marbles in England suitable for the purpose of ecclesiastical edifices. In the southern districts Purbeck marble is the best known, and the pillars in the Temple Church afford a striking instance of its beauty. (By the way, among the recent additions to the Geological Section at the British Museum is a very fine slab of rock from the Purbeck beds of Swanage.) In the north Frosterley marble was the favourite in mediæval times, and extensive use was made of it at Durham Cathedral, for instance, in shafts, steps, &c. But for a considerable period Frosterley marble has been regarded as practically unobtainable. The energy and resources of the Pease family did, indeed, succeed in discovering a bed of it on their lands, and this was turned to account in the Roman Catholic Cathedral at Norwich, and in various fonts and altar-tables. But then, again, the supply failed, and the marble was lost sight of except in very minor pieces. Quite recently, however, at Weardale, in Durham, the Harehope Company were led by some indications in the bed of a mountain burn to make further explorations, with the result that a wide layer of the undoubted Frosterley marble was found bedded and buried in the limestone rock, quite 10ft. below the surface. The marble is black, rich in fossil corals, and very compact, and is said to be better calculated than Purbeck marble to bear great pressure and withstand atmospheric action. This arises from the fact that the fossils, embedded in and forming part of the marble, are said to owe their position and compactness to a salt-water formation, whereas in Purbeck marble the formation was due to the action of estuary or fresh water. Mr. R. L. Steavenson, however, explains "that no working day has passed during the last fifty years in which some of the marble has not been sent along with other beds of limestone to the blast-furnaces, but it occurs under conditions which make it too expensive to work separately and in the large blocks required for architectural purposes. In the measures known as the carboniferous limestone there are what for distinction I will call various seams. The uppermost, or that nearest to the coal measures, is known as the 'fell top limestone,' then about 150ft. below we have the 'little limestone,' and 78ft. lower is found the 'great' or 12-fathom limestone, about 70ft. thick, and the source of the large quantities daily sent to the furnaces. Now this great limestone is divided into about thirty different beds, which for distinction have been supplied with names by the quarrymen . . . . the twelfth and thirteenth are called Thick Cockle and Thin Cockle. These two comprise what is known as Frosterley marble. What I suppose has happened is, that at the quarries mentioned these beds have been found under conditions favourable for working separately, or, perhaps, they have been denuded, all the upper beds having been removed by the glaciers which at one time buried the district, and of which very interesting traces may be seen when the boulder clay is removed in the baring of the limestone. . . ."

**Discovery in Dunfermline Abbey.** As workmen were employed in removing part of the rough stone rubble-work which filled a doorway in the south wall of Dunfermline Abbey, for the purpose of providing a site for a "Soldiers' Memorial" in connection with the South African war, they disclosed a finely-ornamented doorway of Norman architecture of the period and style of the ancient church. The arch of this doorway, which is 9ft. higher than the floor of the church, is richly ornamented on the outer face and the inside of the "roof" with elaborate chevron or zigzag mouldings similar in character to the Norman arcade work on the inside walls of the church. The Norman capitals are enriched with raised floriated scroll-work, and show the only examples of that kind of ornamentation in the church. The sides and lower parts of the doorway have been much mutilated, though the double capitals of those on each side are in good condition. Evidently, at a later date than the formation of the Norman doorway a long flat stone had been laid across resting on the side capitals and forming underneath a shallow chamber or recess. This was found to be filled up with partly loose stones, among which, as in the space above, were a number of fine specimens of mouldings and of carved work, and two skeletons. The doorway was evidently one of the entrances to the church from the ancient monastery on the south side of the Abbey. If the passage of the archway now discovered were completely cleared, entrance to the Wardlaw and former Royal vault would be obtained from the church. The cutting in the abbey wall had been begun, but when the ancient character of the work of the archway was realized operations were stopped. Arrangements will now be made for the full exposure and preservation of this beautiful twelfth-century specimen of the masonic art, another site being found for the memorial.



THE NEW GAIETY THEATRE SEEN THROUGH THE SCAFFOLDING OF THE OLD.

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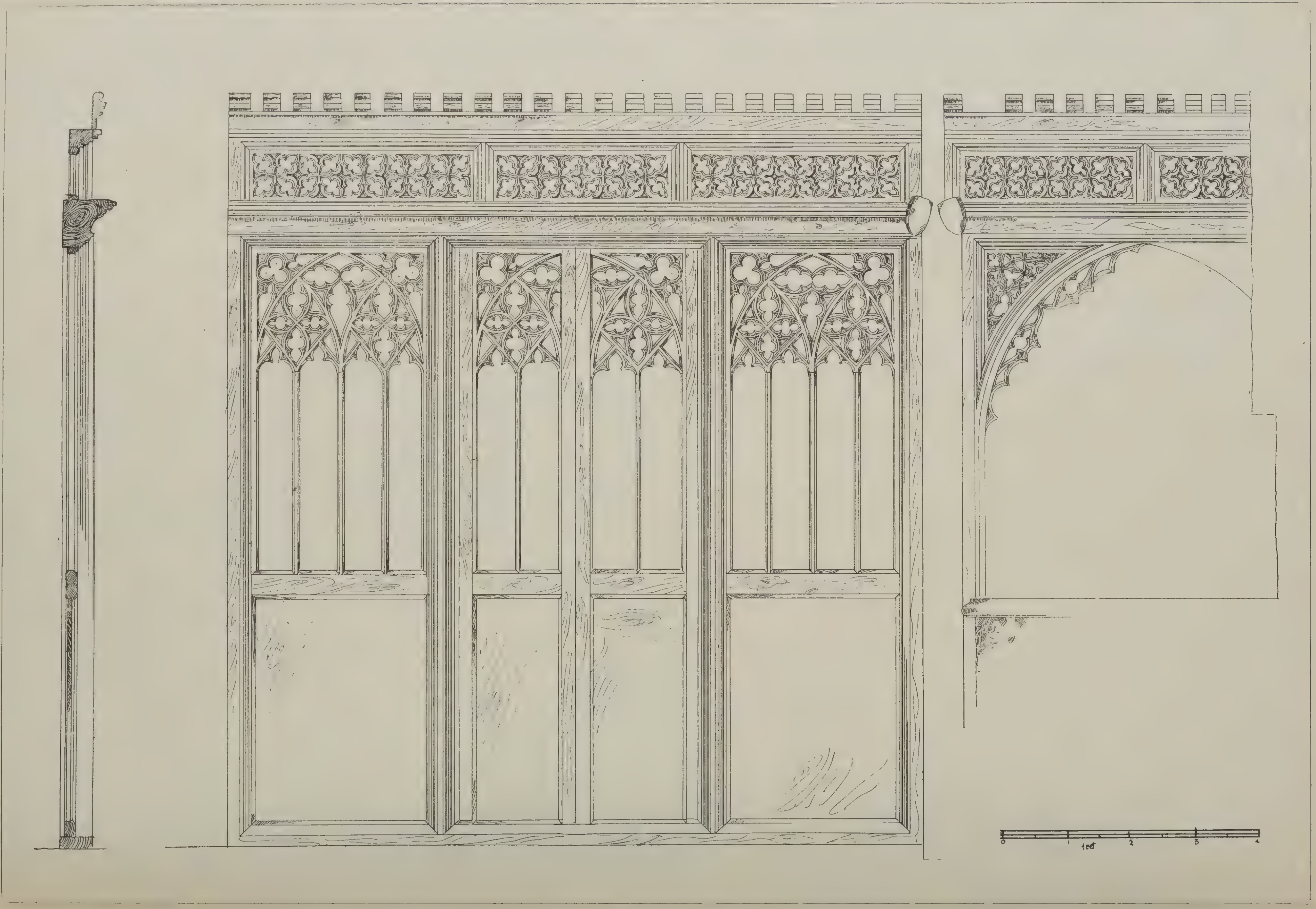

TRINITY CHURCH, BOTTISHAM, CAMBS; SCREEN TO TOMB, SOUTH AISLE. MEASURED AND DRAWN BY CECIL RAYNER,

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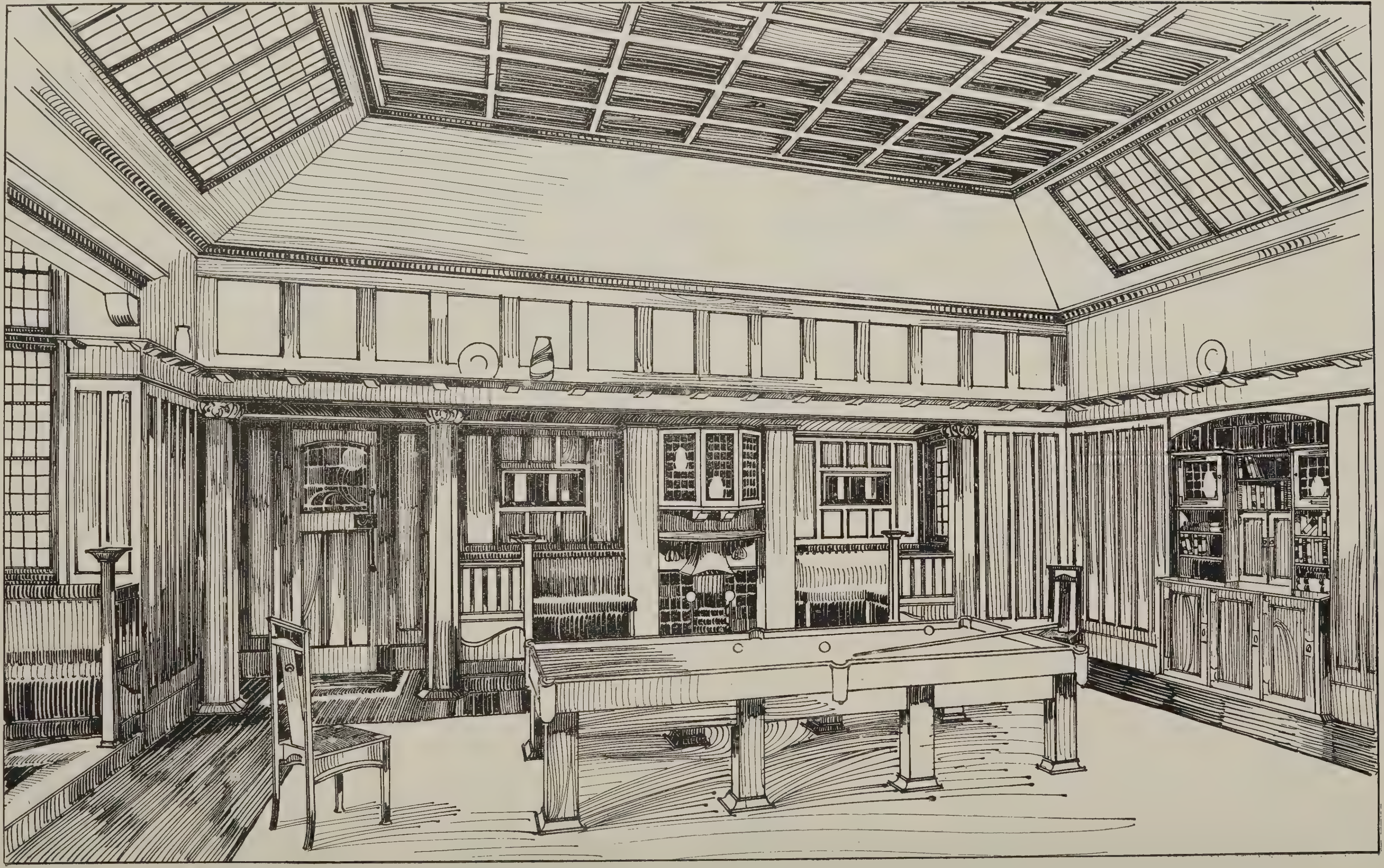

NEW BILLIARD-ROOM AT "WOODLYN" DUNDEE, CHARLES G. SOUTAR ARCHITECT,

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THE BUILDERS' JOURNAL AND ARCHITECTURAL RECORD
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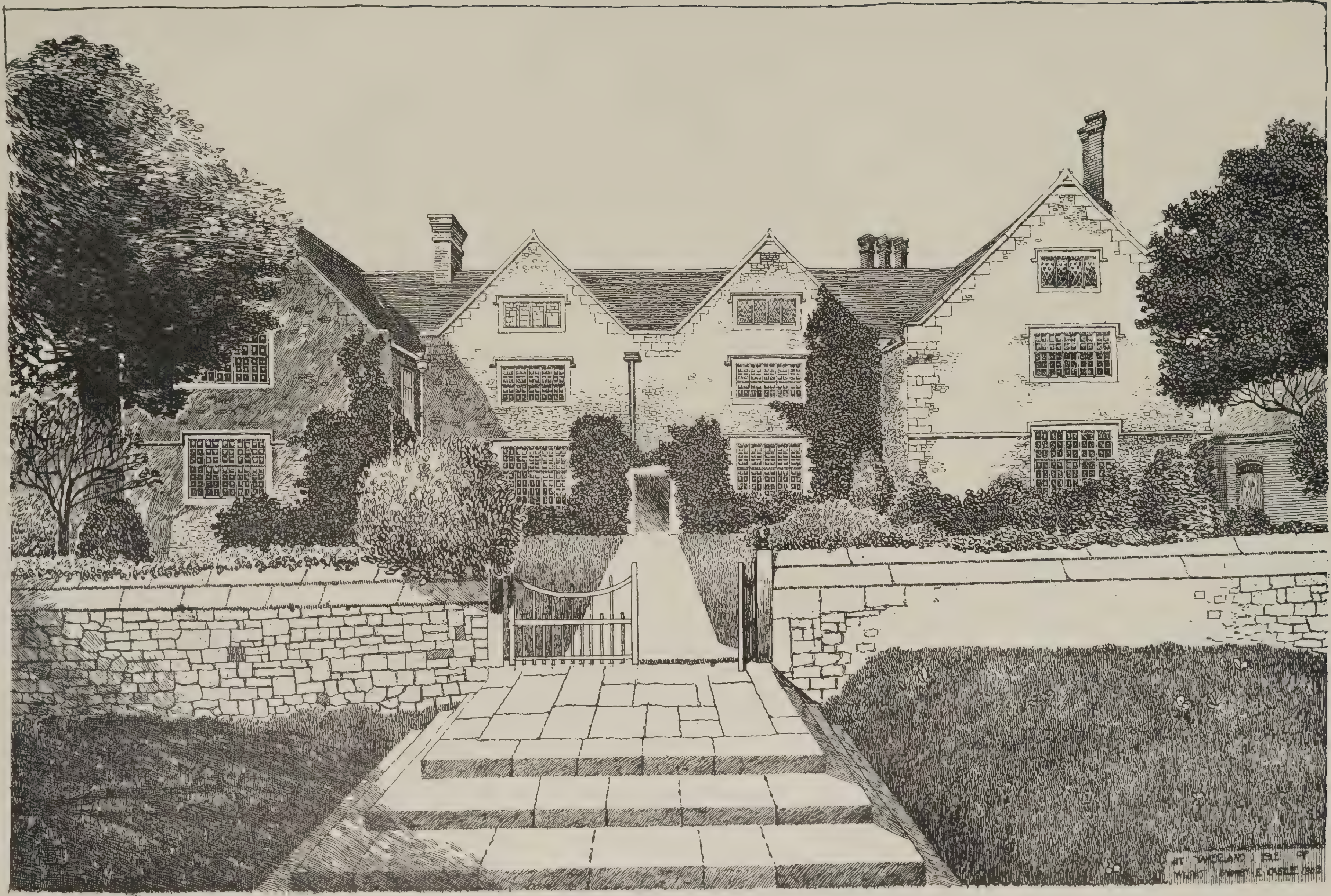

MANOR HOUSE AT YAVERLAND, I.W.

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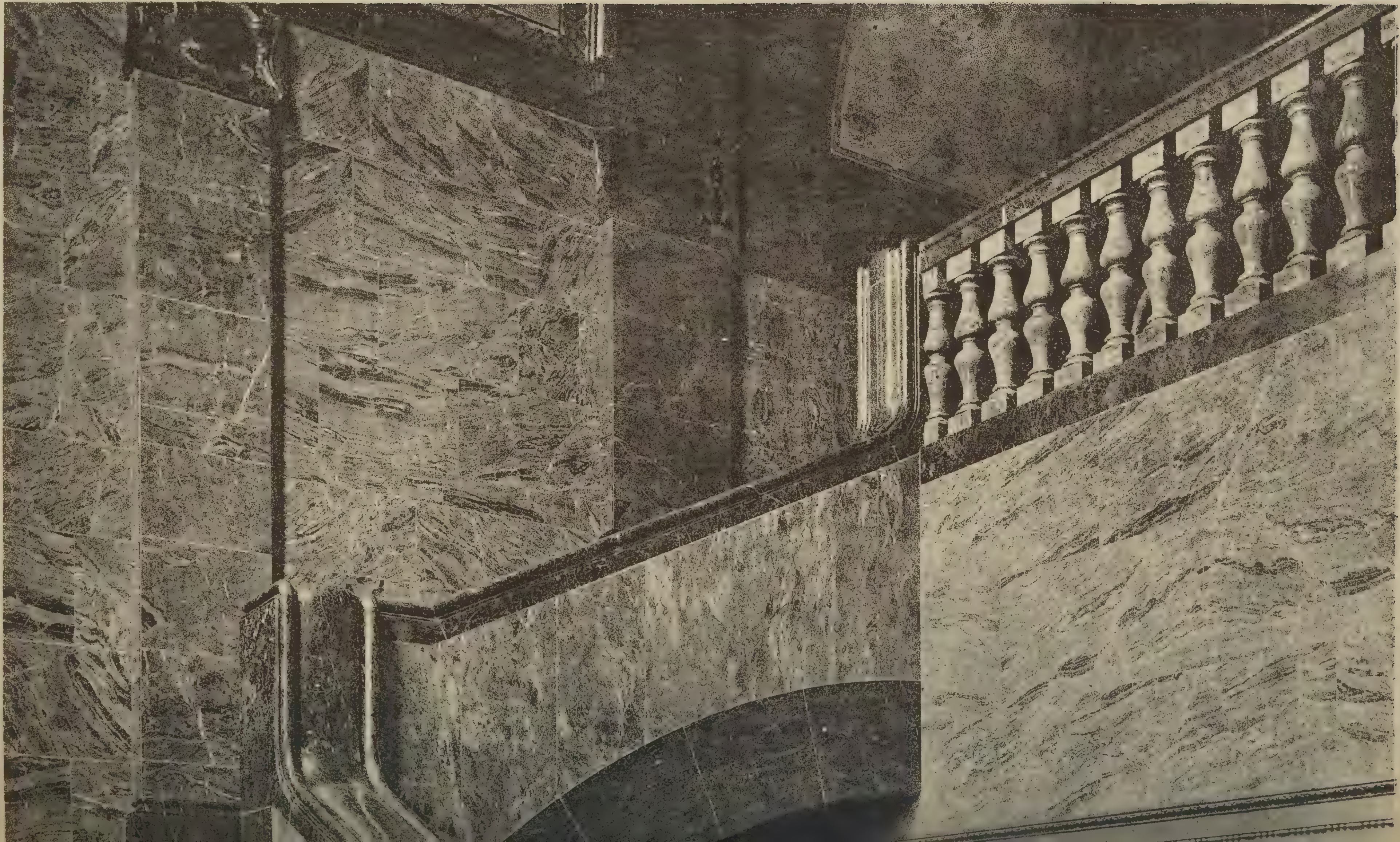

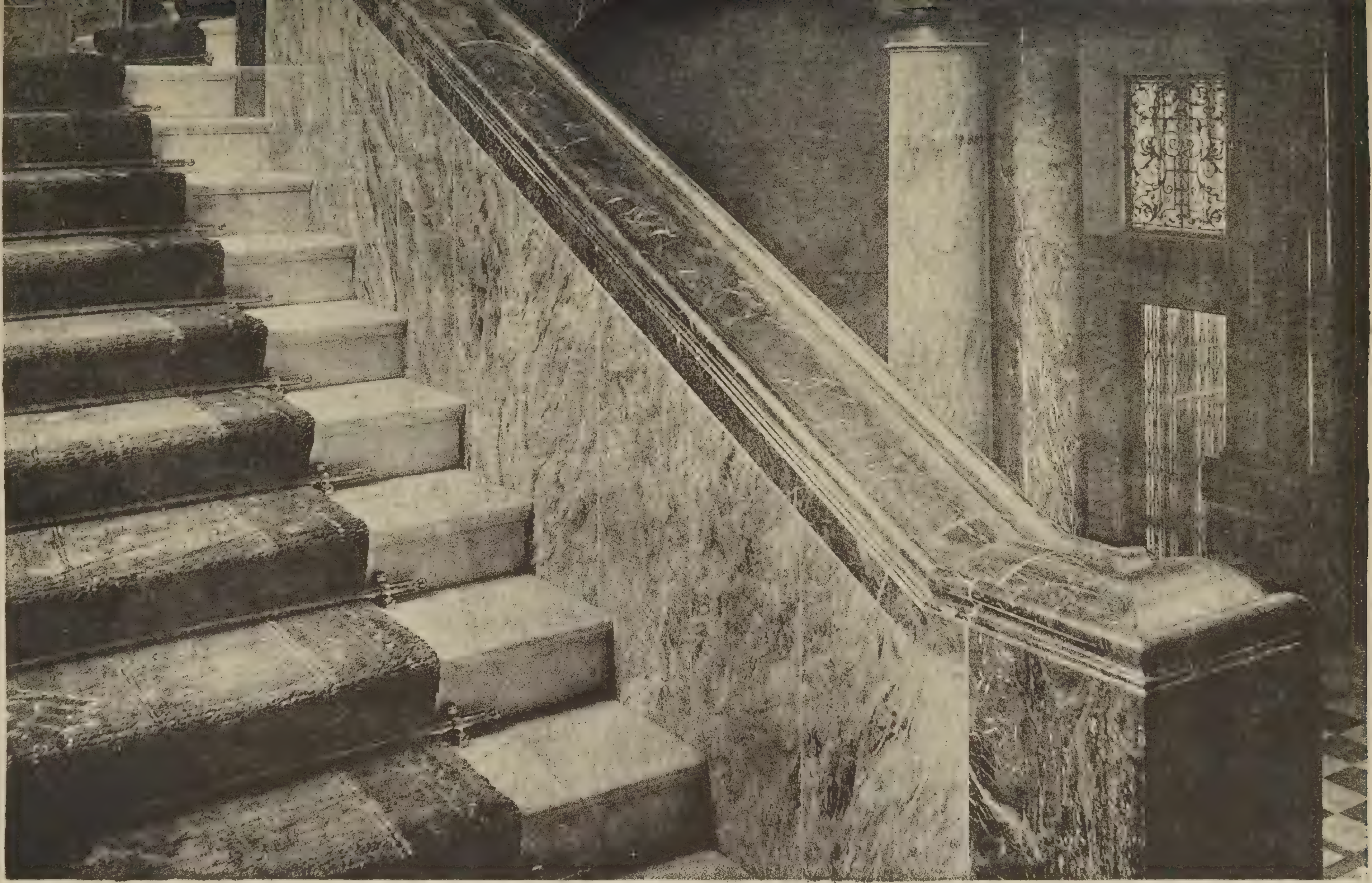

PHOTOGRAPH BY S. B. BOLAS & CO.

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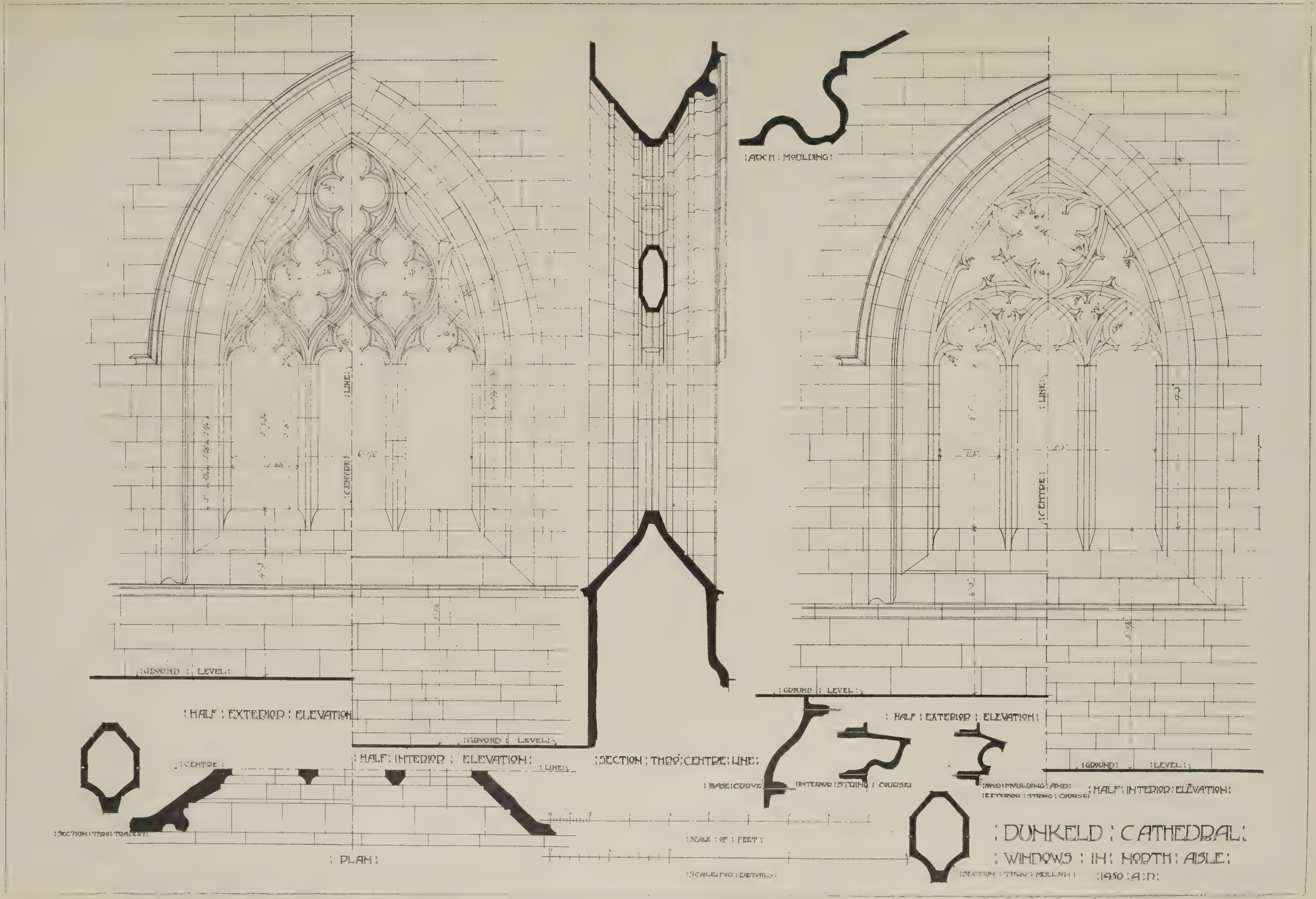
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:SCALE: FOR: DETAILS:
:SECTION: THRO': MULLION:
:DUNKELD: CATHEDRAL:
:WINDOWS: IN: NORTH: AISLE:
:1450: A: D:

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# Enquiries Answered.

*The services of a large staff of experts are at the disposal of readers who require information on architectural, constructional or legal matters. Questions should in all cases be addressed to the Editor. The querist's name and address must always be given, not necessarily for publication.*

### Conway Castle.

Bloxwich.—W. W. writes: "Please mention a book dealing with the history of Conway Castle."

A pamphlet by C. H. Hartshorne on Conway Castle was published in 1854. It was reprinted from the Archæologia Cambrensis, No. XVII., the publisher being Mason, of High Street, Tenby. This would be difficult to obtain now, as only fifty copies were printed in the first instance, one of which is in the R.I.B.A. library. "Mediæval Military Architecture in England," by G. T. Clark, also contains an account of the castle. This work was published by Wyman & Sons, 74–76, Great Queen Street, W.C., and is still purchasable. M.

### Buildings to Measure around Twickenham.

Strawberry Hill.—E. H. writes: "Are there any old churches or other buildings worth measuring within a radius of ten miles of Twickenham, excluding Hampton Court?"

At Merton Church, Surrey, there is a very good wooden Decorated porch enclosing a Norman doorway. The other old work in this church is beyond measuring owing to its bad state of preservation. Carshalton Church, too, contains some Early English work which is worthy of notice; but, generally speaking, there is practically no good old work in the district.

### Prout's Continental Sketches.

Northampton.—J. C. H. writes: "Referring to the present publication of 'Prout's Continental Sketches,' advertised in your journal, are the subjects instructive and interesting to an ordinary individual; also, are they good value for money when compared with other work sold at a similar price?"

Samuel Prout has, of course, found a niche among English architectural draughtsmen, and the collection of sketches in question—outline perspectives—is naturally of interest to anyone who has any liking for old architecture. Whether they are "money value" depends entirely on what your own inclinations are.

### The Law as to Footings.

Birmingham.—Subscriber writes: "A and B are adjoining owners. A builds up to the extent of his boundary and projects his footings on to B's land. A's building subsequently settles and overhangs 3½in. for its whole length. B now wants to build. (1) Can B cut off A's footings and at A's risk? (2) What redress has B for the 3½in. encroachment?"

You omit to state how long A's building has been erected, but I assume that it is more than twenty years old. B should, of course, have protested against A's encroachments at the time they were made, and it is questionable whether he can now call upon B to do anything. Assuming that no question arises as to the exact position of the boundary line, I am of opinion (1) that B cannot cut off the footings without jeopardizing A's building, and that he would himself be liable for any damage resulting from such action; (2) that B has no legal redress if A's building has been erected more than nineteen years and a day (Act of 2 and 3 Will. IV., c. 71). I strongly advise that an amicable arrangement be made with A, either for the purchase by him of a strip covering his encroachment, or for the strengthening of the foundations and the use of the wall as a party wall. F. S. I.

### Gas Engines.

Timperley.—D. B. writes: "Is it possible to use two separate gas engines to drive one long shaft in the following manner? (*Note.*—When all the machines are driven at the same time 30-h.p. is required, though 20-h.p. or even 10-h.p. would often be ample for those in use.) Suppose one engine of 20-h.p. and another of 10-h.p. be employed: can the belting be arranged so that the former works two-thirds of the machines, or the heavy ones consuming two-thirds of the total engine-power, while the latter drives the rest, the shaft being in two separate lengths joined by a clutch? Working as above, 30-h.p. will be available. If 20-h.p. is sufficient for the time being, can the large engine be used to drive any of the machines and in number up to its power?"

In reply to the first part of your query, it it feasible to use the two engines on one shaft as suggested, but if the machines are scattered about it would be necessary to drive the full length of shafting, which would mean a waste of about 1-h.p. for every ton of shafting and pulleys unnecessarily involved. Of course, either engine could be used, as the work required, by putting fast and loose pulleys on the main shaft. The best plan, however, would be to so arrange the machines that one group could be driven by the large engine and one by the small, coupling the main shaft with a good friction clutch, which could be thrown out of gear if required. It is economical to run gas engines at their ordinary full working load, but they should not be run at their absolutely maximum horse-power for lengthened periods.

M. POWIS BALE.

[Messrs. Crosby Lockwood & Son are just publishing Mr. Powis Bale's "Gas and Oil Engine Management," which should be of use to you.—Ed. B. J.]

### "Dinging."

Leytonstone.—Surveyor writes: "What is 'dinging'? How is it made and used? Is it suitable for external work? It is not mentioned in Rivington, Mitchell, Hurst, Molesworth or Kempe's year-book, nor in 'Specification No. 5.'"

"Dinging" is a somewhat ambiguous term. We have usually heard it used to signify the kind of rough-cast made by mixing small pebbles with cement and dinging or dashing it on the surface with a trowel or shovel-shaped piece of wood. "Rough-cast" or "slap dash" is the same as "pebble dash," except it is whitewashed or lime-whited, whereas the latter is not. "Dinging" is thought by some persons to be not so good as ordinary rough-cast owing to a slight tendency when the gravel is mixed with the cement for it to tear away from the wall. The fact is that this makes it more difficult to carry out, but if done carefully and good cement used no real detriment is suffered, and it has the advantage of giving a somewhat smoother surface which does not get so dirtied by smoke and dust; moreover, when subjected to much rain or running water the white surface over the rough-cast is not worn away so easily, nor are the stones removed as with ordinary rough-cast. Of course some architects prefer not to have the rough-cast whitened, but to see the gravel in its natural state uncovered by plaster, and for them the ordinary method is the only one; but, as we have just stated, the objection to this course is that the pebbles get very dirty in smoky towns and are worn away by wet. In Scotland "dinging" is a term derived from the Scotch word *dinge*, to dent, signifying the operation of forcing the mortar into the joints of brickwork by means of a curved tool, or as we call it in England, rule-, V- or beaded-pointing.

### Increasing a Business.

Hemel Hempstead.—Manager writes: "Kindly give a few suggestions for the increasing of a small monumental business."

Advertise in the local press and establish shops in places near.

### Protective Solution for Wood.

Manchester.—Estate Department writes: "What preserving solution for wood would be the most suitable (1) to withstand acetic or chlorine acids, aniline and ammonia fumes, (2) steam, (3) to avoid discolouring drops when steam condenses on the timber?"

Try Granitic Paint, supplied by the Granitic Paint Co., of Cross Street, Creek Road, Deptford, S.E.

### Quantity Surveying.

Quantity writes: "On p. 452 of Leaning's 'Quantity Surveying' there is an example of quantities for excavation, &c. Can I use it as an example of how to take off? Are the dimension sheets I enclose wrong? You will notice there is a great difference in the quantities."

We cannot go into such elaboration over what appears to be purely a matter of correct dimensions. Leaning is a very good authority to follow for trade customs as to general methods of taking quantities, but the intricacies of everyday practice must of course be settled by common-sense and a working knowledge of the principles.

### Appraiser's License: Building Contracts.

Sydenham.—Reader writes: "(1) In what cases is it necessary when valuing property for an architect to hold an appraiser's licence; where is it obtained, and upon what kind of form (if any) should a valuation be made? (2) Is it imperative that the building contract in duplicate for the erection of complete new buildings, to be binding, should have a 10s. stamp affixed on both forms? (3) Is it necessary to have such forms of agreement for additions and alterations only?"

(1) Yes; see p. 8 of our issue for February 18th. No special form is used. (2) Yes, as either might have to be used as evidence. (3) No, they are not generally used for such work.

### Technical Institutes.

Bath.—V. S. writes: "Kindly refer me to any books or papers dealing with technical institutes, and any particulars which might be of use in framing estimates for the erection and fitting of such buildings. In the case of the special allowances made by the Board of Education under rule 22 for the 'Planning and fitting up of Public Elementary Schools,' do the sums per ft. super. there mentioned apply to each floor? In a building, for instance, where a central hall is provided both on the ground and first floor, would £1 per ft. super be allowed for each?"

The only book dealing with technical institutes is that by E. C. Robins, "Technical School and College Building," published in 1884. A very valuable paper on "The Design of Technical Schools" was read before the Architectural Association on January 15th, 1892, by Professor Garnett. This contains much useful information with regard to the relation and connection of the different rooms and their position in regard to one another. Another useful paper on "Technical Institutes" was read by Mr. J. H. Wells also to the Architectural Association in February, 1896. With regard to the fitting-up of the rooms for science, information would be found in "The Planning and Fitting-up of Chemical and Physical Laboratories," by T. H. Russell, published by Batsford at 7s. 6d. The extra sum sanctioned by the Board of Education where a central hall is provided would be reckoned for all the halls where there were more than one; but the amount now allowed under this head should be 15s., not £1 as stated. FELIX CLAY.

# Keystones.

**Change of Address.**—Mr. James S. Gibson, architect, has removed to No. 5, Old Bond Street, London, W.

**A new Reredos and Altar at Crewkerne Church** have been erected by Messrs. Harry Hems & Sons, of Exeter, from designs by Mr. Howard Gaye, of 3, Maida Vale, London, W.

**A new Church at Badshot Lea** has been erected by Mr. G. Kemp, builder, of Aldershot, from designs by Mr. Mileham, of London.

**The Gardens of Gray's Inn** which stretch along the south side of Theobald's Road will shortly be opened to public view, the old high brick wall giving place to iron railings.

**The Northern Polytechnic, Holloway Road, N.,** has been enlarged by the addition of a new wing, erected at a cost of £16,000. It provides extra accommodation for the building, physics and chemical departments.

**Ulster Society of Architects.**—At the last meeting it was intimated to the students that when a sufficient number presented themselves examinations for qualification as associates of the Royal Institute of British Architects would be held by the Society.

**Albert Hall.**—Mr. Somers Clark, the well-known architect, writes complaining that the pavement around the Albert Hall is too narrow and that there is no pavement on the opposite side of the road in front; that the roads around are badly made, badly kept and badly lighted, and not watched properly by the police, the shelter around the hall being frequented at night by disreputable persons.

**Society of Architects' Examination.**—At the recent examination to qualify for membership of the Society of Architects, one of the candidates, Mr. W. D. Jenkins, of 12, Frederick Road, Sparkhill, Birmingham, was successful in qualifying for a special certificate of honours and the gold medal of the Society. Mr. Jenkins is the first to have attained this distinction, to obtain which it is necessary for the candidates to have passed in every subject of each section at one examination and to have secured at least 80 per cent. of the obligatory marks.

**The Architectural Students of King's College** have now started, or rather restarted, the Architectural Society (K.C.A.S.) Its objects are: (1) to take most of the architectural periodicals; (2) to hear papers read by members or others, followed by a discussion, once a fortnight; (3) to visit various buildings of interest; (4) to provide a common room at the college for use of members. It is open to past and present students, with a terminal subscription. Professor Elsey Smith has consented to give the inaugural address next Thursday, November 5th, at 5 p.m.

**Originality in Glasgow.**—At the opening meeting of the Glasgow Architectural Association, Mr. W. J. Blain, president, delivered an address, when he dealt with the importance of Glasgow as an original architectural centre. After tracing the history of building in the city during the last two hundred years, he said it was to the general average of work as represented by the minor architects and speculative builders, inspired by the greater architects, that we must look for the carrying forward of the traditions of work and the selection of the type most fit to survive for the public use. Much of this work was of excellent and original character, and the increase of wealth and changes in building and feuing conditions had given the architects an opportunity for rich and comprehensive treatment of building problems they never had before. He believed the architecture of Glasgow had not only an unbroken continuity of growth, but contained elements of vitality and life which did not exist in many of the larger national centres.

**The Queen Victoria Memorial Fund** now amounts to £250,000.

**The result of our Competition for Drawings of Details** will be announced in our next issue.

**The King's Sanatorium.**—H.M. the King laid the foundation stone of the King Edward the Seventh Sanatorium at Midhurst yesterday. The architect is Mr. H. Percy Adams, F.R.I.B.A.

**Blocks of Cottage Homes,** accommodating 120 children and officials, have been erected at Styal, near Wilmslow, by the Chorlton Guardians, at a cost of £10,450, from designs by Mr. J. H. Broadbent, of Manchester.

**A new Stained-glass Window in Westminster Abbey** has recently been placed in Poet's Corner. It is the work of Messrs. Burlison & Grylls, acting under the supervision of Mr. G. F. Bodley, R.A.

**The new Grange U.F. Church, Grangemouth,** was opened last week. It is designed in a severe type of Early English Gothic, with very simple detail and little or no ornament except such as naturally arises from the design. It will seat over 630 persons, and the hall in connection is seated for 400 people. There are also a large session-room, vestry, &c. The total cost is expected to be about £4,000. The architect is Mr. John B. Wilson, A.R.I.B.A., I.A., of Glasgow.

**New French Director of Fine Arts.**—M. Marcel has been appointed by the French Government to be Director of Fine Arts. He began his public career in 1880 as chief secretary to M. Fallières, at that time Under-Secretary of State for the Interior. After filling several Government posts he became chief secretary to M. Hanotaux, Minister for Foreign Affairs, in 1896, after which he was sent to Stockholm as Minister. On his return he was appointed Councillor of State, a position from which he now retires to take up his new post.

**The Royal Waterloo Hospital for Children and Women** in Waterloo Bridge Road is now being rebuilt. The new buildings are being carried out in three sections to avoid interference with the working of the existing hospital. When fully completed the new hospital will contain provision for about 200 beds, with a separate nurses' home. The portion of the hospital now in progress will provide for about 100 beds, and the out-patients' department: the contract for the first two sections is £30,000, and the total cost will amount to about £50,000. The front will be in red brick and terra-cotta and the corner entrance porch of glazed ware, the cost of which is being defrayed by Messrs. Doulton & Co. as a gift to the hospital. The contractors are Messrs. Holliday & Greenwood, Ltd., and the architects Messrs. Waring & Nicholson, of 38, Parliament Street, S.W.

**A Window designed by Mr. Byam Shaw** has been placed in the east end of St. Thomas's Church, Leeds, the only example of the late Mr. Butterfield's work in the city. It is distinctly original in treatment. In the centre of the five lights of which the window consists is a figure of Our Lord in glory, a severe, almost archaic figure, swathed in robes the convolutions of which give a curious complexity of lines. On either side are two angels kneeling in adoration. These figures are connected with the central one by decorative work bold in design and rich in colour. The artist has, after the manner of the old Italian painters of altar-pieces, introduced several contemporary figures in the lower half of the window, and has further followed antique precedent in identifying them by labels. The background of the window is of a sea-green tone, leaded in narrow vertical slips, while the topmost portion is strong in colour, the violent contrast of full-toned purple and amber giving an approach to top-heaviness.

**Cost of Westminster Cathedral.**—The total amount so far expended on the building of the new Westminster Cathedral is £196,000.

**A Bronze Statue of Queen Victoria at Croydon,** the work of Mr. F. J. Williamson, has been erected outside the town hall.

**Architectural Drawings.**—M. Ziem, the painter of Venetian scenes, who originally intended to become an architect, has presented to the Dijon Museum the drawings with which he obtained the grand prize for architecture at the Dijon School of Fine Arts sixty-four years ago.

**New London Fire Stations** have been opened on the Victoria Embankment, near Vauxhall Cross, and in Rotherhithe Street, East Rotherhithe, at costs of £8,400 and £9,525 respectively. The buildings were erected by the L.C.C. Works Department. The Fire Brigade Committee is asking the Council to sanction the erection of the following new fire stations:—86 and 88, Queen Victoria Street, and 30 and 32, Cannon Street, City, at a cost of £62,450, in substitution of the present station in Watling Street; at the junction of Hooper's Court with Basil Street, opposite Pavilion Road, Knightsbridge, at an expenditure of between £37,000 and £40,000, in substitution of the present Knightsbridge station, and at the junction of Shrewsbury Lane and Eaglesfield Road, Shooter's Hill, costing £12,000 in substitution of the existing station.

# Obituary.

**Mr. Alfred Evans,** builder, of Middleton, committed suicide recently.

**Mr. Wilfred Joseph Cripps, C.B., F.S.A.,** died at his residence at Cirencester recently, aged sixty-two. He was a distinguished archæologist and a leading authority on old English plate.

**Mr. James Martin Brooks, A.R.I.B.A.,** architect, of Orchard Cottage, Ashford, Middlesex, and 35, Wellington Street, Strand, died last week at Ashford, at the age of fifty years. Deceased was the eldest son of the late Mr. James Brooks, the eminent ecclesiastical architect.

**Mr. G. B. McDonald,** builder, of Newburgh, died recently at the age of forty-seven years. He began his trade of building with the late Mr. G. Bett, completing it at Kinfauns and Edinburgh. He took up business in his native town about ten years ago. He was also a sculptor, and executed a good deal of work in that way.

# Correspondence.

## Buildings to Measure at Manchester.

*To the Editor of* The Builders' Journal.

London, S.W.

Sir,—Referring to the query in your recent issue, I should advise "Nocte" to make a drawing of one of the chapels in Manchester Cathedral, with details of one of the old screens, on which there is some good carving. The work in the choir is also good, notably the bench ends and miserère carvings to stalls. Although most of the work has been restored, yet it was carried out by one of the most noted and able architects in England, the late Mr. Crowther, who, together with Mr. H. Bowman, published "Churches of the Middle Ages" in 1845. Most of the stonework in the choir, which has also been restored, may be said to be a reproduction of the old work.—Yours truly,

W. EATON, A.R.I.B.A.

# Electrical Notes.

### Electric Radiators.

Now that the cold weather is about to commence, the business in electric heating-appliances is stimulated, and those firms who make these articles a speciality are issuing their season's price-lists. It cannot be said that there is anything particularly novel to be found, perhaps for the reason that finality was probably reached some time ago. The "glow-radiator" is about as efficient as it ever will be, and only varies from year to year in design and ornamentation. With regard to this type of radiator, which is more popular than the wire-resistance form owing to its cheerful appearance, there are some fallacies worth correcting. Those who glibly assert that electric heating is an expensive luxury should qualify their statement by adding "if applied under the same conditions as coal heating." The electric radiator is extremely useful for quickly heating small spaces, where coal would require a much longer time. All the heat generated is utilized; with coal 75 per cent. goes up the chimney, and much coal has to be burnt both before and after the desired effect has been obtained, all of which is so much loss. Again, dirt and unhealthy gases are produced, labour has to be paid for laying and removing the fire, and time being money a loss can be shown in waiting for the required effect. Taking everything into consideration, therefore, heating by coal fire does not compare so favourably with electric heating as many people imagine. For those who are about to purchase electric radiators a word of advice is to buy a few spare lamps. The stock of these has of late years been low, and it does not do to have to wait till the warm weather for orders to be executed.

### The Electric Wiring Business.

At no time in the history of electric wiring was there ever a period when the contractor did not complain of bad business and small profits, but perhaps during the last year the complaints have been louder and more frequent than hitherto. No doubt this has been due to the mysterious agency which is adversely affecting every business just now, but out of it all comes the firm of Drake & Gorham, Ltd., with flying colours. At the meeting a few days ago it was shown that large and important installations had been carried out, especially amongst the aristocracy. Whether this class of the community pays higher prices than the average person, it is impossible to say, but nevertheless the dividend of 8 per cent. and the carrying forward of nearly £10,000 is most creditable in these hard times. As to the cause of bad business amongst the wiring contractors generally and continually, it is perhaps not difficult to guess some of the reasons: these are—too many firms, too much competition, too little capital and too little business capacity. In house wiring, more than in any trade, a firm must be able to get a fair price for its work; it must have enough capital to keep going in slack times and be able to wait for payment; and it must be managed from a business standpoint first and from an electrical one next. More money is lost in bad estimating for labour than in anything else.

### The Engineering Standards Committee.

The sub-committee of this important body, which is now considering the question of generators, motors and transformers generally, has issued a report on their findings in regard to electrical pressures and frequencies. This has been done owing to the numerous interests involved, and without waiting for the completion of the whole report. In all, four findings have been arrived at, namely, (1) standard direct-current pressures at consumers' terminals, 110, 220, 440 and 500 volts; (2) standard direct-current pressures at the terminals of motors for tramways 500 volts, for railways 600 volts; (3) and (4) standard frequency 25 and 50 periods per second. The first finding was based on the Act of 1899, in order not to affect the users of lamps or motors, namely that the pressures should be as measured at the consumers' terminals; and for technical reasons those chosen best meet the requirements of manufacturers of machines. The whole of the findings were most carefully considered, and makers, consulting engineers and users were largely consulted before the final conclusions were arrived at. The Board of Trade also took an active interest in the consultations. Regarding the third and fourth findings, the two frequencies were chosen for certain specified work respectively which experience has shown to be most suitably adapted to their use; but generally it may be said that 25 periods is used for large schemes and 50 periods for small schemes. To the manufacturing world the findings will be of great interest. How far they will be universally adopted is another question.
A. M. I. E. E.

**Greenwich Generating Station.**—The Highways Committee of the London County Council propose that the contract for supplying four 5,000-h.p. engines required for the electricity generating station now being established at Greenwich in connection with the electrical working of the Council's tramways should be given to Messrs. John Musgrave & Sons, Ltd., of Bolton, whose tender amounts to £96,713. The highest tender is that of Messrs. Williams & Robinson, Rugby, £131,857, and the lowest, which is described as "incomplete," that of Messrs. Fullerton, Hodgart & Barclay, of Paisley, for £36,817.

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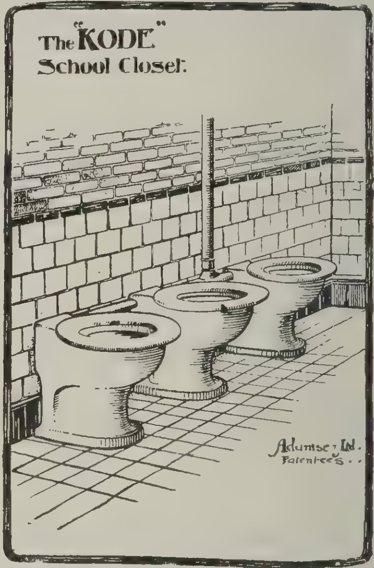

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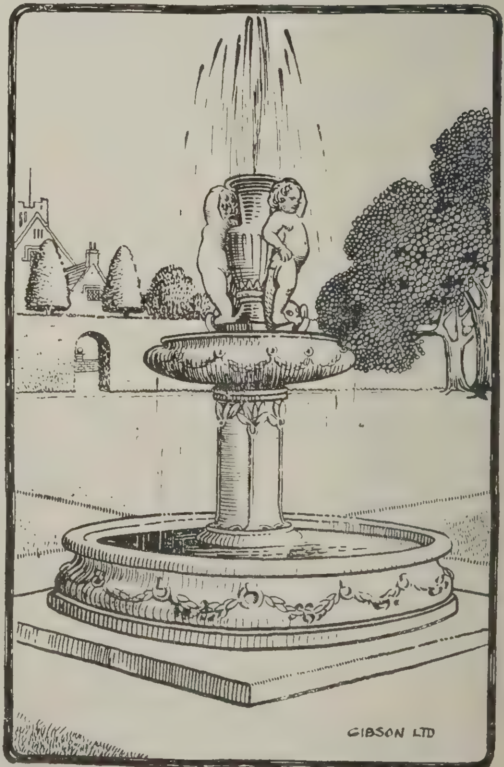

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# R.I.B.A.

## PRESIDENT'S ADDRESS.

THE opening meeting of the session of the Royal Institute of British Architects was held on Monday evening at 9, Conduit Street, W., when Mr. Aston Webb, R.A., F.S.A., delivered his presidential address. After referring to the membership of the Institute, the election of Fellows and the Architectural Association Day School (which seemed destined to work almost a revolution in our architectural education, though compared with the École des Beaux-Arts it is but a commencement as yet), Mr. Webb spoke of the new form of conditions of contract which, while recognising the absolute authority of the architect over the workmanship and materials used on works, has defined, as far as is possible, the relative responsibilities and duties of the client, the architect, and the contractor. Mr. Webb then dealt with

### The Registration Question.

He said:—As stated in a circular sent round to members of the profession, it is some sixteen years since this matter was first formally brought forward and a Bill prepared; but in reality the subject was mooted by members of the Institute so long ago as 1854, and brought up in subsequent years, without, however, any action being taken. I mention these dates to show that inaction on the part of this Institute has been deliberate and intentional, and does not arise from any want of due consideration of so important a matter.

For myself, I was honorary secretary of this Institute from 1889 to 1892, when the question of registration was brought most prominently forward, and thus became well acquainted with the details of the proposals and the arguments for and against them.

Those arguments appear to me to remain much the same to-day, on both sides, as they were then. Then, as now, there was a considerable body of opinion in favour of the proposal, and I certainly do not wish in any way to minimise the amount of it. Then, as now, there was a considerable body of opinion strongly against it, and under these circumstances I venture to say, gentlemen, the thing for the moment is outside the realm of practical politics; for any experienced politician will tell you that Parliament would never grant compulsory powers of the sort proposed, except at the general request of the members of the profession interested, and at present there can be no doubt that the profession is sharply divided on the point.

I think I ought to say to you quite frankly, as your president, that personally

### I am not a Supporter

of the proposal at the present time, though I agree that the large body of opinion in favour of it cannot and must not be ignored. Evils there undoubtedly are, which should be removed; but, personally, I would try every possible alternative before applying such drastic remedies as those proposed by this compulsory registration, which I believe must be repugnant to every artist, whether a supporter of the proposal or not.

I am well aware that there is a large number of architects, especially amongst those practising outside the metropolitan area, who are in favour of compulsory registration; but I find amongst the leaders of our profession, those whose work we admire, and on whose judgment we rely, that they are, as far as I know, almost to a man strongly against the proposal; and I say again, therefore, to myself, we should hopelessly divide the profession by pressing the proposal at the present time. Consideration it is bound to have, but acceptance is hardly likely to be obtained by putting a pistol at the head of the Institute and demanding registration or our life.

Remember, this proposal would not only register certain architects, but would decline to register others. A registration which gives one man a right to call himself an architect, and refuses it to another, is a very difficult and serious matter; and I must say I should be sorry myself to have to pronounce judgment, for while A. may think X. a good architect, B. may not consider him an architect at all. Who, then, is to decide?

I think I clearly understand the grievance against which registration is proposed as a remedy. Put quite shortly it is this: An architect, let us say, in a country town, is endeavouring to carry out artistic work and to uphold the honour of the profession; but he finds much of the work he considers should go to him taken up by others whom he knows are not artists in any sense of the word, and are untrammelled by any notions of honourable professional conduct, and have no right to be called architects at all. So he says let a law be passed that every man must pass a prescribed examination before he can call himself an architect, and then will the public be able to separate the sheep from the goats. I admit the grievance, and sympathise most sincerely with my friend; but I doubt the wisdom or efficacy of the proposed remedy.

I would ask this question of those who favour registration. Is it proposed for the benefit of architecture or architects? I know they will say and believe it is for both.

Well, then, take the benefit to architecture first, as it should be taken. It will be admitted, I think, that good architects will do just as good architecture whether they are registered or not; it will therefore make no difference whatever to our best architecture. Our friend replies that may be so, still it will prevent an enormous amount of bad architecture being perpetrated throughout the country by incompetent men. I take leave to doubt this; I fear that when registration became compulsory, though you would register much ability, you would also register much inability. That is the danger, and I fancy our friend would find himself worse off than before. Much of our building (it cannot be called architecture) is done by speculating builders, auctioneers, &c., who very properly do not now call themselves architects, and registration would not affect them as far as I understand it. It is true they would not be able to recover their charges as architects in a court of law, but builders are not paid by fees, and they would not call themselves architects. They will continue their work, and be perhaps even helped, for probably some of the best amongst them would work up and pass the examination and carry on their poor buildings under the full authority and sanction of a Government diploma, and we shall see on the window blind—"Estate Agent and Government Architect," and many such like combinations. Will this improve our architecture, or help our friend?

Then, again, we have generally thought a man who has the right to call himself an architect acquires the right by the buildings he has designed and whose erection he has superintended. This is the test we ask of our own Fellows, but this compulsory registration would require that he be hall-marked "Architect" by Government examination, probably before he has designed or superintended a single building. Surely this is putting the cart before the horse, and cheapening the title of architect! We admit Associates by examination, but require seven years to elapse and evidence of actual building before he becomes a Fellow. Suppose a man obtains the Government diploma, and his buildings turn out unsatisfactory, what will happen then? In fact, is it possible to decide on paper whether a man is an architect, or on the same evidence to deny him that honourable name?

Another difficulty is, What standard of architectural excellence is to be fixed for the right of this Government diploma? It must, apparently, be the same for the practitioner in a distant country district as for our larger cities. Is this fair or desirable?

Again I would ask sympathising as I do all the while with this grievance, is all this ticketing and docketing compatible with our art? Protection is in the air, I know, and I am not rash enough to express any opinion upon it. But I do know that Art has always been free. Let us not be the ones to shackle it. An artist is born, not made; no questions or answers admit him into the fold, only his work. We are constantly being told that doctors and lawyers have these Government diplomas, and so ought we; and if we venture to suggest that painters, sculptors and engineers have none and require none, we are told that has nothing to do with it; but why not? Are not painting, sculpture, and engineering more nearly allied to architecture than law or medicine? I should have thought so.

Then, as regards its benefit to architects, we are told that this diploma is essential in order to make the lazy ones work; the Institute examination, they say, is not sufficient inducement, and we must therefore compel them to come in. I can only say again, I do not think so. The lazy men we should admit, for this reason, had far better remain outside. Again, as regards the benefit to architects, I would ask you to remember that if this proposal were legalised tomorrow, the engineer, the borough surveyor, and surveyor, if members of the Institution of Civil Engineers or the Surveyors' Institution, would be exempted from all restrictions, and would continue to practise architecture precisely as they do at present; the registered architect would come to be looked upon more as a luxury or as a consultant, to be called in on very important matters only, and so a large part of the work, which is already so greatly encroached upon, would finally slip away from architects altogether. It would also be necessary that all those calling themselves architects at the time of the passing of the Bill, whatever their qualifications, would receive the Government diploma, so I am afraid our friend in the country town would receive no relief in his lifetime.

The words of the memorial addressed to the Council in 1891 appear to me as true now as then—"That a diploma of architecture would be a fallacious distinction, equally useless as a guide to the public and misleading as an object for the efforts of the student." And, further, that "no legislation can protect the public from bad design."

While saying this, I would like those who are in favour of the compulsory registration of architects to believe that we are entirely in sympathy with every effort to raise the status of architecture and the architect in this country, and it is on this very account that I ventured to discuss the matter at some length this evening.

It seems to me we must first come to some agreement amongst ourselves as to the standard to be set up, and how it is to be tested, and until this is defined registration would be useless and fallacious.

### Education Proposals.

Education is everywhere the cry, and if this Institute is to take a more prominent part in architectural education it will be necessary to depart, to some extent, from the position it has taken in this matter up to the present time.

Up to the present we have been satisfied, and I think rightly so, by endeavouring to arrive at and suggest a standard of architectural education by means of our examinations, leaving the preparation and education of students to others. During the last session your council had laid before them for their consideration certain draft proposals on architectural education, drawn up by a body of well-known architects interested in this question, though not at present members of this Institute, including such well-known names as Mr. Reginald Blomfield, Professor Lethaby, Mr. Mervyn Macartney and Mr. Halsey Ricardo. These proposals set forth the proposition that neither the system of articled pupilage nor the training in polytechnics and art schools had proved satisfactory, and that a combination of the two systems was desirable; that architectural education at present suffers from want of organisation, and should be taken up by a representative body of architects—such as this Institute—which shall be accepted by the public and profession as authoritative.

The proposals suggested a preliminary course of training in schools and workshops, and a subsequent course in the office of a practising architect, an endeavour being made to co-ordinate and bring into line existing institutions by the adoption, in conjunction with these institutions, of a uniform system, with a central body such as this Institute at the head.

This, omitting all details, which are of course important, gives a fair idea of the proposals, and, I believe, commended itself to the Council as not only a desirable proposal but also an eminently practicable one.

The Council having ascertained that the authors of these proposals would be willing to assist the Institute in working them out, by appointing some of their number to act on a committee, the Council have appointed an Education Committee; and amongst those outside the Institute who have accepted an invitation to join our deliberations are Sir Arthur Rücker, Principal of London University; Mr. T. G. Jackson, treasurer of the Royal Academy; Mr. Sidney Webb, L.C.C.; Professor Perry, of the Board of Education; and Mr. Basil Champneys; while the authors of the draft proposals nominated Mr. Reginald Blomfield, Professor Lethaby, Mr. Halsey Ricardo and Mr. Macartney.

This committee has met and discussed the matter and, with the aid of a sub-committee, has drawn up and adopted a report which is now under the consideration of the Council, and I am not, therefore, in a position to bring it before you, though I hope to be able to do so early in the course of the present session. We are encouraged to hope that we may be enabled to obtain the co-operation of the various teaching bodies in London in the scheme, and in course of time to extend our operations to the chief cities of the kingdom.

We also hope to constitute a Board of Architectural Education, bringing upon it distinguished men interested in the subject, whether members of the Institute or not, its main duties being those of an advisory board on the courses of architectural studies in the various schools and their examinations.

As the scheme develops we hope to have the assistance of our allied societies, and to offer facilities to their members to participate in the advantages of these improved methods of education, and first and foremost we hope to unite in one great effort for the improvement of the education of our younger brethren and give them advantages we sorely miss ourselves.

The past year has seen some notable events in architectural history—the opening of Truro Cathedral, completed in the course of fifteen years, with the exception of its western towers; the selection of a design for the new cathedral of Liverpool; the opening up of a large portion of the Strand improvement by the London County Council, and the erection of an important building on a portion of its site; the adoption of a design by the same body for the new Vauxhall Bridge; and the selection of a design for the great university at Cardiff. Further progress has been made with the great Government buildings in Whitehall and elsewhere, including, it is understood, the purchase of the remainder of the Great George Street site; while the Government have completed their great Post-Office building at West Kensington.

### London Squares.

A note of warning greatly affecting London has been sounded during the last few days by the advertising for sale, for building purposes, of three of the principal squares in Kensington, which, if carried out, would greatly interfere with the amenities and healthfulness of the Royal borough: and if the same process were carried through London it is almost impossible to realise the havoc that would be wrought.

It has been suggested that Parliament should obtain some control over these open spaces, which would not interfere with landlords' and frontagers' rights, beyond the disability of covering them with buildings; and we must earnestly hope that Parliament and the County Council will lay their heads together to this end.

### Truro Cathedral.

It has been my good fortune to see Truro Cathedral since it was completed, and all who have done so will, I am sure, agree with me that the new nave is a noble addition to the building, and that, accepting the literal use of a previous style in which its designer was so thorough a master, the result is impressive and worthy of the great effort made by Cornishmen for its erection. The deflection of the main axis of the nave, some 6ft., I believe, in a length of 300ft., and mainly caused by the necessities of the site, lends, I cannot doubt, advantage to the general effect, both internally and externally. Externally one could wish the material had been entirely granite, but probably the cost of this would have been practically prohibitory.

### Liverpool Cathedral.

Since last we met, Liverpool has also decided upon a cathedral, designed on mediæval lines by a young man bearing an honoured name in the architectural world, whose success must be a matter of encouragement to young men, and demonstrates once again the immense opportunities opened to young architects of ability by the competition system. It does not come within my province at this stage to refer critically to the design; but I am sure you will join with me in wishing Mr. Gilbert Scott success in his great and responsible undertaking. The appointment of Mr. Bodley, one of the assessors, as joint architect with Mr. Scott to carry out the work is contrary to our "Suggestions," and must not be looked upon as a precedent. The circumstances were very exceptional. I understand it was done with the complete concurrence of Mr. Scott, and was only agreed to by Mr. Bodley after great pressure had been put upon him, and when it became evident that the award would otherwise be put aside.

Continuing, Mr. Webb referred to civic control, instancing the laying out of Washington on a large and comprehensive scale, for which a committee was appointed consisting of two architects, Mr. Burnham and Mr. McKim, a leading sculptor, Mr. St. Gaudens, and the late Mr. Olmsted, as representing what is best in garden architecture in America.

This is carrying out to some extent the more complete system in existence in France, where every public building has an architect attached to it, and, if necessary, an assistant architect, who, commencing in some humble capacity at the Council of Civil Buildings, in due time is admitted as assistant to the Board, or Council, which gives him right of presentation to a public building in course of construction, as subordinate to the architect who is carrying it out, to spend his day on the works, and to rise, if he conducts himself well, to be assistant architect or joint architect to a building, and ultimately architect-in-chief: in course of time being summoned to take the place of Councillor on one of the various Boards, and ultimately elected to the Academy of Fine Arts.

Thus, said Mr. Webb, the State not only assists in providing an efficient system of architectural education, but also provides itself with an efficient body of trained architects to undertake its public buildings, all working on a well-defined tradition, and producing works of great excellence, which we cannot but admire. "I do not propose to compare these systems with the course adopted in this country, partly because you are all well aware what that is, and also because I am afraid the comparison could hardly be in favour of this country. Not that I mean, for a moment, that the French system in its entirety would be suitable here; it tends no doubt to a loss of individuality, which would hardly be tolerated here, for though we talk a good deal of working on traditional lines, I am not sure whether we have yet learnt the lesson of sinking our own individuality sufficiently to do so."

### The need for a Government Commission.

I have mentioned these systems in force in France and America to draw attention once more, as I ventured to do last year, to the pressing need there seems to be in Great Britain for some authority to whom schemes of public improvements should be submitted, not necessarily for sanction, but for consultation and advice. The work could hardly be entrusted to any single individual, but there would surely be no difficulty in finding men of skill, taste and authority enough, and with patriotism enough, to form such a Commission as that established in New York, and on the same terms, if asked to do so by His Majesty's Government.

A case in point has lately arisen on the question first raised by Mr. Hamo Thornycroft, on the alignment of the eastern end of the Strand Improvement Scheme. The London County Council have shown great consideration, but they have decided that not one of the proposals made (including that I presume of their own adviser) offers sufficient advantages to justify the Council in incurring the great expense which would be involved in increasing the already adequate width (100ft.) of the portion of the thoroughfare in question; and so what appeared to many brought up to consider such matters a great opportunity is lost to London. The decision may be right or may be wrong. My point is, and I speak with all respect: Are we satisfied with the competency of the tribunal to decide so important a matter?

Then again, the solution of the Vauxhall Bridge design, which dragged on for so long, and was so happily settled as soon as collaboration between engineer and architect was established, would have been still further greatly accelerated had there been some such commission to which the matter could have been referred.

Again, there is that most thorny question of the control for the great new street from Holborn to the Strand. The Committee of the London County Council paid us the compliment of consulting us in the early stages, while the laying out of the street was under consideration, and also with regard to obtaining designs, with every intention, we fully believe, of carrying the accepted one through; but nothing has been done, so far, and this, as we firmly believe, not from want of will on the part of the Committee and officials, but from want of power, which the strong opinion of a competent authority would have supplied.

I venture to think the formation of such an authority should be advocated by this Institute.

# Law Cases.

**Libelling a Builder.**—The case of *Day* v. *May and wife* was heard last Friday in the King's Bench Division of the High Court of Justice. This was an action brought to recover damages for libel. The alleged libel was painted on a blackboard put up in front of the defendants' house, and was as follows: "The drains of this house have been condemned, and are being entirely reconstructed by H. Plumber, of 36, Lichfield Grove." Mr. Finch said the plaintiff was a builder carrying on business in Finchley. The house in question was bought by Mrs. May in 1902. Before the sale (in March) the plaintiff wrote to the defendants that the drainage had been carried out according to the requirements of the local board. The defendants went into possession in May, and made no complaint to the plaintiff till October, when Mr. May exhibited a board in the garden on which was painted the libel complained of. This was calculated to do the plaintiff great damage. Mr. Justice Relf put the following questions to the jury:—(1) Were the words painted on the board a libel on the plaintiff?—Yes. (2) Were they true?—No. (3) If not true, what damages?—£10. (4) Were the letters of March 11th and 26th intended to be a warranty?—No. Judgment for plaintiff against Mr. May with £10 damages and costs. Judgment for Mrs. May with costs.

# Tenders.

*Information from accredited sources should be sent to "The Editor" at latest by noon on Monday if intended for publication in the following Wednesday's issue. Results of Tenders cannot be accepted unless they contain the name of the Architect or Surveyor for the work.*

*Addressed postcards on which lists of tenders may be stated will be sent post free on application to the Manager,* BUILDERS' JOURNAL, 6, *Great New Street, Fetter Lane, E.C.*

**Ascot (Berks).**—For alterations to the Queen's Hall, for the County Council. Mr. Joseph Morris, county surveyor, Broadway Buildings, Reading. Quantities by surveyor:—

| | | |
|---|---|---|
| Burfoot & Son | £3,995 | 0 |
| G. H. Tucker | 3,787 | 0 |
| F. Newberry | 3,597 | 0 |
| H. Charman | 3,400 | 0 |
| McCarthy Fitt | 3,379 | 0 |
| Cox & Sons | 3,303 | 10 |
| I. B. Seward | 3,247 | 0 |
| E. C. Hughes | 3,223 | 17 |
| W. Hawkins | 3,178 | 0 |
| F. Pizzey | 3,150 | 0 |
| G. Brown | 3,144 | 0 |
| W. Watson,* Ascot | 3,100 | 0 |
| Bennett & Sons | 2,800 | 0 |

[County surveyor's estimate, £3,121 4s. 11d.]

* Accepted.

**Bootle (Lancs.).**—For the extension of present boiler-house at the electric-light station, Pine Grove, for the Corporation. Mr. B. J. Wolfenden, borough engineer:—

Contract No. 1.

| | | | |
|---|---|---|---|
| P. McKinley | £1,306 | 8 | 7 |
| S. Webster | 1,301 | 0 | 0 |
| J. Townson & Co. | 1,279 | 7 | 8 |
| G. Woods & Son | 1,211 | 6 | 11 |
| W. Musker | 1,175 | 0 | 0 |
| Wellman Brothers | 1,165 | 13 | 4 |
| P. Tyson | 1,149 | 14 | 5 |
| Hughes & Stirling | 1,140 | 0 | 0 |
| J. & G. Chappell | 1,086 | 16 | 0 |
| J. Riddock* | 1,033 | 0 | 0 |

Contract No. 2.

| | | | |
|---|---|---|---|
| Holme & Green | 1,404 | 0 | 0 |
| J. Paterson & Son | 1,366 | 0 | 0 |
| S. Fowler | 1,350 | 0 | 0 |
| G. Woods & Son | 1,350 | 0 | 0 |
| S. Webster | 1,300 | 0 | 0 |
| J. & G. Chappell | 1,237 | 0 | 0 |
| J. Riddock* | 1,231 | 0 | 0 |
| W. Musker | 1,225 | 0 | 0 |
| Hughes & Stirling | 1,220 | 0 | 0 |

* Accepted.

**Fareham (Hants).**—For the erection of an engine-house, &c., at the county asylum, Knowle, for the Hants County Council. Mr. W. J. Taylor, county surveyor, The Castle, Winchester:—

| | | |
|---|---|---|
| J. Croad | £2,185 | 0 |
| Knight Brothers | 1,955 | 10 |
| Rashley & Son | 1,887 | 0 |
| W. Wallis,* Littlehampton | 1,634 | 0 |

* Accepted.

**Peckham.**—For alterations, &c., to the Bun Shop B. House, High Street, Peckham. Mr. H. M. Wakley, architect, Albion Chambers, 11, Adam Street, Strand, W.C.:—

| | |
|---|---|
| Townsend | £425 |
| W. Garner & Co. | 279 |
| King & Son | 269 |
| Nash | 265 |

**Mansbridge (Hants).**—For new burial-ground near Mansbridge, and erecting thereon a chapel and curator's lodge, and to execute other works incidental thereto, for the South Stoneham Parish Council. Mr. Charles H. Brightiff, architect, 13, Portland Terrace, Southampton:—

| | | |
|---|---|---|
| Jenkins & Sons, Ltd. | £1,453 | 0 |
| H. Stevens & Co. | 1,450 | 0 |
| Wright & Son | 1,427 | 0 |
| W. Ward | 1,370 | 0 |
| Dyer & Sons | 1,360 | 0 |
| F. Osman | 1,332 | 10 |
| J. Nichol | 1,294 | 0 |

[Architect's protecting estimate, £1,400.]

[All of Southampton]

**Pontefract.**—For various works required in the erection of a free library in Salter Row, Pontefract. Messrs. Garside & Pennington, architects, Pontefract and Castleford. Quantities by the architects:—

| | | | |
|---|---|---|---|
| W. Walker, Castleford | £2,005 | 0 | 0 |
| J. Bentley, Leeds | 1,986 | 12 | 2 |
| Perry & Sons, Castleford | 1,972 | 2 | 7 |
| G. Spurr | 1,959 | 4 | 8 |
| A. Askam | 1,902 | 15 | 11 |
| Thompson & Sons, Sherburn | 1,847 | 0 | 0 |
| Gelder Brothers & Woodcock | 1,798 | 12 | 0 |
| H. Gundill* | 1,744 | 4 | 8 |

[Note.—£150 allowed by the Corporation for wood-block floors not included in the above contract.]

* Accepted. [Rest of Pontefract]

**Southampton.**—For additions to Chilworth Manor. Messrs. Colson, Farrow & Nisbett, architects, Winchester:—

| | | |
|---|---|---|
| Luscomb, Exeter | £25,326 | 0 |
| Grace, Clatford | 23,996 | 14 |
| Thompson, Peterborough | 21,890 | 0 |
| Roberts, London | 20,981 | 0 |
| Dyer, Alton | 20,968 | 0 |
| Rashley | 20,471 | 0 |
| Goddard, Farnham | 20,250 | 0 |
| Dyer | 19,270 | 0 |
| Jenkins | 18,987 | 0 |
| Franklin* | 18,290 | 0 |

* Accepted subject to certain omissions.

[Rest of Southampton.]

# Bankruptcies.

[Abbreviations: R.O.—receiving order; P.E.—public examination; C.C.—county court; O.R.—official receiver; Adj.—Adjudication.]

DURING THE WEEK ending Oct 30th, thirty-five failures in the building and timber trades in England and Wales were gazetted

WELLS & SON, builders, Wisbech. R.O. Oct. 23rd.

E. SHELLARD, contrator, Bristol. Adj. Oct 22nd.

J. BULLEN, builder, Guildford. Adj. Oct. 24th.

H. MAYO, builder, Tooting. R.O. October 19th.

W. STRINGER, builder, Hove. Adj. Oct. 20th.

E. W. ISLIP, builder, Selly Oak. R.O. Oct. 21st.

W. DAVIES, jr, quarry proprietor, Bettws-y-coed.

T. E. MOORE, builder, Leicester. R.O. Oct. 24th.

L. M. JONES, late builder, Pontycymmer. R.O. Oct. 23rd.

T. H. DUTTON, stonemason, Northwich. R.O. Oct. 23rd.

J. W. SMITH, builder and contractor, Birmingham. Liabilities £4,643; assets £1,164.

R. FARR & SONS, decorators, Wealdstone. R.O. Oct. 17th.

A. W. MARTIN, late builder, Nottingham. P.E., Nottingham C.C., Nov. 6th, at 10.30.

LEVERETT & SON, timber merchants, Ipswich. P.E., Ipswich Shirehall, Nov. 20th, at 10.30.

AMES & Co., timber merchants, Birmingham. Adj. Oct. 21st.

S. T. LETTS, painter and decorator, Erdington. R.O. Oct. 19th.

A. C. ROBERTS, builder and contractor, Havant. R.O. Oct. 21st. P.E., Portsmouth C.C., Nov. 30th, at 11 30.

A. CALVERT, joiner, Scarborough. R.O. Oct. 21st. First meeting, 74, Newborough, Scarborough, Nov. 11th, at 4. P.E., Scarborough C.C., Dec. 8th, at 12.

M. HALL, contractor, Bradford. R.O. Oct. 23rd. First meeting, O.R.'s, Bradford, Nov. 6th, at 3. P.E., Bradford C.C., Nov. 18th, at 10.

W. GREEN, painter, plumber, builder and contractor, Leigh and Hindley. R.O. and adj. Oct. 7th. P.E., Bolton C.C., Oct. 28th, at 3.

H. D. E. EARL, architect, Worthing. R.O. Oct. 22nd. First meeting, O.R.'s. Brighton, Nov. 12th, at 10.15. P.E., Brighton C.C., same day, at 11.

J. LAKE, lime merchant and stonemason, Chudleigh R.O. Oct. 23rd. First meeting, O.R.'s, Exeter, Nov. 12th, at 10.30. P.E., The Castle, Exeter, same day, at 11.30.

G. SAXTON, builder, Upton Manor. R.O Oct. 22nd. First meeting, London Bankruptcy Court, Nov. 5th, at 12. P.E., same, Dec. 1st, at 11.30.

D. GIBB & Co., builders and contractors, Limehouse, E. R.O. Oct. 19th. First meeting, London Bankruptcy Court, Nov. 6th, at 11. P.E., same, Dec. 3rd, at 11 30.

E. J. LEEDS, painter, plumber, &c., Norwich. R O Oct. 19th. First meeting, O R.'s, Norwich, Nov. 5th, at 12.30. P.E., Norwich Shirehall, Nov. 18th, at 11.

W. H. HENSON, plumber and glazier, Burton Latimer. R.O. Oct. 20th. First meeting, O.R.'s. Northampton, Nov. 7th, at 12. P.E., Northampton County Hall, Nov. 17th, at 12.

E. W. MESSITER, speculative builder, London, S.W. Gross liabilities £134,177; £11,930 unsecured; estimated surplus in assets £16,748. Failure attributed to inability to obtain sufficient advances upon or to realize properties in consequence of general depression caused by the war.

# Current Market Prices.

## FORAGE.

| | | £ | s. | d. | £ | s. | d. |
|---|---|---|---|---|---|---|---|
| Beans | per qr. | 1 | 14 | 0 | 2 | 0 | 0 |
| Clover, best | per load | 4 | 5 | 0 | 4 | 10 | 0 |
| Hay, good | do. | 3 | 12 | 6 | 4 | 0 | 0 |
| Sainfoin mixture | do. | 3 | 15 | 0 | 4 | 5 | 0 |
| Straw | do. | 1 | 10 | 0 | 2 | 0 | 0 |

## OILS AND PAINTS.

| | | £ | s. | d. | £ | s. | d. |
|---|---|---|---|---|---|---|---|
| Castor Oil, French | pet cwt. | 1 | 0 | 5 | | — | |
| Colza Oil, English | do. | 1 | 3 | 0 | | — | |
| Copperas | per ton | 2 | 0 | 0 | | — | |
| Lard Oil | per cwt. | 2 | 15 | 0 | 2 | 17 | 0 |
| Lead white, ground, carbonate | do. | 1 | 4 | 10 | | — | |
| Do red | do. | 1 | 0 | $4\frac{1}{4}$ | | | |
| Linseed Oil, barrels | do. | 0 | 17 | $7\frac{1}{2}$ | | — | |
| Petroleum, American | per gal. | 0 | 0 | $7\frac{3}{8}$ | 0 | 0 | $7\frac{1}{2}$ |
| Do. Russian | do. | 0 | 0 | $5\frac{3}{4}$ | 0 | 0 | $5\frac{7}{8}$ |
| Pitch | per barrel | 0 | 8 | 0 | | — | |
| Shellac, orange | per cwt. | 11 | 0 | 0 | 11 | 2 | 0 |
| Soda, crystals | per ton | 3 | 2 | 6 | 3 | 5 | 0 |
| Tallow, Town | per cwt. | 1 | 7 | 6 | | — | |
| Tar, Stockholm | per barrel | 1 | 0 | 6 | | — | |
| Turpentine | per cwt. | 2 | 3 | 6 | | — | |

## METALS.

| | | £ | s. | d. | £ | s. | d. |
|---|---|---|---|---|---|---|---|
| Copper, sheet, strong | per ton | 73 | 0 | 0 | | — | |
| Iron Staffs. bar | do. | 6 | 5 | 0 | 6 | 7 | 6 |
| Do. Galvanised Corrugated sheet | do. | 11 | 0 | 0 | 11 | 5 | 0 |
| Lead, pig, Soft Foreign | do. | 11 | 3 | 9 | 11 | 6 | 3 |
| Do. do. English common brands | do. | 11 | 10 | 0 | 11 | 12 | 6 |
| Do. sheet English 3lb. per sq. ft and upwards | do. | 14 | 0 | 0 | | — | |
| Do. pipe | do. | 15 | 0 | 0 | | — | |
| Nails, cut clasp, 3in. to 6in. | do. | 9 | 5 | 0 | | — | |
| Do. floor brads | do. | 9 | 0 | 0 | | — | |
| Steel, Staffs. Girders and Angles | do. | 5 | 15 | 0 | 7 | 2 | 6 |
| Do. do. Mild bars | do. | 6 | 5 | 0 | 6 | 15 | 0 |
| Tin, Foreign | do. | 118 | 5 | 0 | 118 | 15 | 0 |
| Do. English ingots | do. | 122 | 10 | 0 | 124 | 0 | 0 |
| Zinc, sheets, Silesian | do. | 23 | 2 | 6 | | — | |
| Do. do. Vielle Montaigne | do. | 23 | 10 | 0 | | — | |
| Do. Spelter | do. | 20 | 17 | 6 | 21 | 5 | 0 |

## TIMBER.

### SOFT WOODS.

| | | £ | s. | d. | £ | s. | d. |
|---|---|---|---|---|---|---|---|
| Fir, Dantzic and Memel | per load | 1 | 13 | 0 | 3 | 0 | 0 |
| Pine, Quebec, Yellow | do. | 5 | 5 | 0 | 6 | 5 | 0 |
| Do. Pitch | do. | 2 | 12 | 0 | 3 | 3 | 0 |
| Laths, log, Dantzic | per fath. | 4 | 10 | 0 | 5 | 10 | 0 |
| Do. St. Petersburg | do. | 7 | 5 | 0 | | — | |
| Deals, Skönvik Yellow 2½×7 | per fath. | 5 | 0 | 0 | | — | |
| Do. St. Petersburg, 3rd, Yellow, 3×11 | do. | 7 | 5 | 0 | 7 | 15 | 0 |
| Do. do. do. do. 3×9 | do. | 8 | 5 | 0 | | — | |
| Do. do. do. do. 3×7 | do. | 8 | 0 | 0 | | — | |
| Do. do. do. do. 2½×7 | do. | 8 | 10 | 0 | | — | |
| Do. do. do. White 2½×7 | do. | 8 | 0 | 0 | | — | |
| Do. Keret, Yellow, 2nd, 3×9 | do. | 16 | 15 | 0 | | — | |
| Do. do. do. 3rd, 3×9 | do. | 13 | 5 | 0 | | — | |
| Do. Altu (Abo) Yellow Unsorted, 2½×7 | do. | 0 | 0 | 0 | | — | |
| Do. do. do. 5th, 3×11 | do. | 7 | 0 | 0 | | — | |
| Do. do. do. do. 3×10 | do. | 7 | 0 | 0 | | — | |
| Do. do. do. do. 3×9 | do. | 7 | 15 | 0 | | — | |
| Do. do. do. do. 2½×7 | do. | 8 | 0 | 0 | | — | |
| Do. Kola, 4th Yellow, 3×11 | do. | 7 | 5 | 0 | | — | |
| Do. do. do. 3×9 | do | 8 | 5 | 0 | | — | |
| Do. Langror, 5th Yellow, | do. | 9 | 0 | 0 | 9 | 10 | 0 |
| Do. St. John, Spruce, 1st, 2nd, and 3rd, 2½×7 | do. | 8 | 5 | 0 | | — | |
| Do. Quebec & Batiscan, Bright Spruce, 1st, 3×9 | do. | 12 | 10 | 0 | | — | |
| Do. do. do. 3×8×13ft. | do. | 11 | 15 | 0 | | — | |
| Do. do. do. 3×8×12ft. | do. | 11 | 10 | 0 | | — | |
| Do. Marsonis & Quebec, Bright Spruce, 1st, Unsorted, 3×8 | do. | 7 | 15 | 0 | | — | |
| Do. Montreal, Bright Pine, 1st, 3×11 | do. | 31 | 0 | 0 | 31 | 10 | 0 |
| Do. do. Yellow do., 1st, 3×12 to 20 to 3×16 to 22 | do. | 22 | 10 | 0 | | — | |
| Do. do. Bright do., 3rd, 3×11 to 20 to 3×16 to 22 | do. | 12 | 15 | 0 | | — | |
| Battens, all kinds | do. | 6 | 10 | 0 | 21 | 15 | 0 |
| Flooring Boards 1in. prepared, 1st | per square | 0 | 11 | 6 | 0 | 12 | 3 |
| Do. 2nd | do. | 0 | 9 | 6 | | — | |
| Do. 3rd, &c. | do. | 0 | 7 | 6 | 0 | 9 | 3 |

### HARD WOODS.

| | | £ | s. | d. | £ | s. | d. |
|---|---|---|---|---|---|---|---|
| Ash, Quebec | per load | 3 | 12 | 6 | | — | |
| Birch, Quebec | do. | 3 | 12 | 6 | 3 | 17 | 0 |
| Box, Turkey | per ton | 15 | 0 | 0 | 20 | 0 | 0 |
| Cedar, Cuba | per ft. sup. | 0 | 0 | $5\frac{1}{4}$ | | — | |
| Do. Honduras | do. | 0 | 0 | $5\frac{31}{32}$ | | — | |
| Do. Tobasco | do. | 0 | 0 | $4\frac{21}{32}$ | | — | |
| Elm, Quebec | per load | 4 | 0 | 0 | | — | |
| Mahogany, Average Price for Cargo, Honduras | per ft. sup. | 0 | 0 | $6\frac{5}{32}$ | | — | |
| Do. African | do. | 0 | 0 | $4\frac{7}{32}$ | | — | |
| Do. St. Domingo | do. | 0 | 0 | $3\frac{29}{32}$ | | — | |
| Do. Cuba | do. | 0 | 0 | $3\frac{29}{64}$ | 0 | 0 | $4\frac{11}{16}$ |
| Do. Lagos | do. | 0 | 0 | $3\frac{5}{8}$ | | — | |
| Do. Benin | do. | 0 | 0 | $4\frac{11}{32}$ | | — | |
| Do. Tobasco | do. | 0 | 0 | $6\frac{11}{32}$ | 0 | 0 | $8\frac{1}{4}$ |

# Complete List of Contracts Open.

| DATE OF DELIVERY. | WORK TO BE EXECUTED. | FOR WHOM. | FROM WHOM FORMS OF TENDERS MAY BE OBTAINED |
|---|---|---|---|
| | **BUILDING:** | | |
| Nov. 5 | Gillingham, Kent—Twenty-six Cottages | —— | E. J. Hammond, 21 Balmoral Road, Gillingham. |
| „ 5 | Ketley, Salop—School, &c. | Education Committee | C. R. Dalgleish, Architect, Shrewsbury. |
| „ 5 | Assouan, Egypt—Hospital | —— | Director-General, Sanitary Department, Cairo. |
| Nov. 5 | Harlech, Wales—Semi-detached Villas | —— | Captain W. Jones, Bronwen Terrace, Harlech. |
| „ 6 | King's Heath, near Birmingham—Goods Shed | Midland Railway Co. | Company's Architect, Cavendish House Derby. |
| „ 5 | Swinton, Lancs—Seating and Desks for Council Chamber | Urban District Council | H. Entwisle, Surveyor, Council Offices, Swinton. |
| 6 | Brickendon—Bridge and Piling | Hertford R.D.C. | J. W. Riggs, Surveyor St. Elmo, Fanshawe St., Benges, Hertford. |
| „ 6 | Chichester—Shed, &c... | Corporation | J. Pym-Jones, City Surveyor, Lion Street, Chichester. |
| „ 6 | Hebden Bridge, Yorks—Walling | —— | Mr. Howard, Secretary, Bowling Club, Foster Lne., Hebden Brdge. |
| „ 6 | Enniskillen—Cells | Fermanagh County Council | H. H. Archdall, Secretary, Court House, Enniskillen. |
| „ 6 | Ewell, Surrey—Laundry and Mortuary | Asylum Committee | Clerk, Asylums Committee, 6 Waterloo Place, S.W. |
| „ 7 | Barrow-in-Furness—Sailors' Home | —— | Mr. Tonge, Furness Railway. |
| „ 7 | Windsor—Shop and Dwelling-House | —— | P. H. Grove, 14 Alma Road, Windsor. |
| „ 7 | Tarn Green, Grange-over-Sands—Wall | V. C. W. Cavendish, M.P. | Mr. Mansergh, Farm House, Tarn Green. |
| „ 8 | Belfast—Alterations at Dispensary Stations | Union Guardians | Young & Mackenzie, Engineers, Workhouse, Belfast. |
| „ 9 | Aberystruth, Wales—Additions to School | School Board | R. L .Roberts, Architect, Abercarn. |
| „ 9 | London, N.W.—Hospital | Hampstead General Hospital Committee. | Young & Hall, 17 Southampton Street, Bloomsbury, W.C. |
| „ 9 | Norwich—Alterations, &c., to Laundry | Workhouse Guardians | Morgan & Buckingham, Architects, Norwich. |
| „ 9 | Haverstock Hill—Hospital | Hospital Committee | Young & Hall, 17 Southampton Street, W.C. |
| „ 9 | Leeds—Alterations, &c., to Hospital | Workhouse Guardians | T. Winn & Sons, 22 Albion Street, Leeds. |
| „ 9 | Stoke-upon-Trent -Alterations, &c., to Public Baths | Corporation | A. Burton, Borough Surveyor, Town Hall, Stoke upon-Trent. |
| „ 9 | Fulham, S.W.—Boundary Walls, &c. | Borough Council | F. Wood. Borough Engineer, Town Hall, Fulham. |
| „ 10 | Leicester—Government Offices, &c. | Commissioners of H.M.Works,&c. | Secretary, H.M. Office of Works, &c., Storey's Gate, S.W. |
| „ 10 | Southampton—Additions, &c., to Offices | Commissioners of H.M.Works,&c. | Secretary, H.M. Office of Works, &c., Storey's Gate, S.W. |
| „ 10 | Limerick - Kitchen, &c. | Guardians | H. J. Guinane, Clerk, Workhouse, Limerick. |
| „ 10 | London, S.E.—Library | Lewisham Public Libraries Committee. | J. R. Vining, 89 Chancery Lane, W.C. |
| „ 11 | St. Columb, Cornwall—Reconstructing Infirmary | Union Guardians | J. Ennor & Sons, Newquay. |
| „ 11 | Manchester—Telephone Exchange, &c. | Commissioners of H.M.Works.&c. | Secretary, H.M. Office of Works, &c.. Storey's Gate, S.W. |
| „ 11 | Moss Side, Manchester—Fire Station | Urban District Council | H. B. Longley, Surveyor, Council Offices, Moss Side, Manchester. |
| „ 11 | Penycoedcae—Twelve Houses | Building Club | A. Bryant, Architect, Midland Bank Buildings, Pontypridd. |
| „ 11 | Norwood—Repairs and Re-decoration at School Infirmary | Lambeth Gardens | W. Thurnall, Clerk, Guardians' Offices, Brook Street, Kennington Road, S.E. |
| „ 11 | Levenshulme—Additions to Council Offices | Urban District Council | J. Jepson, Architect, Guardian Chambers, Tiviot Dale, Stockport. |
| „ 12 | Herne Bay—Alterations, &c.. to Town Hall | Urban District Council | F. W. J. Palmer, Surveyor, Council Offices, Town Hall, Herne Bay. |
| „ 13 | Newry—Alterations to Workhouse | Union Guardians | W. R. Bell, Clerk, Workhouse, Newry. |
| „ 13 | Birmingham—Bricks, Lime, Cement, &c. | Water Committee | E A. Lees, Secretary, 44 Broad Street, Birmingham. |
| 14 | Liscard, Cheshire—School | Wallasey Education Committee | E. Kirby, 6 Cork Street, Liverpool. |
| „ 16 | Bradford—Enlargement of Central Offices | Guardians | Empsall & Clarkson, 7 Exchange, Bradford. |
| „ 16 | Ebbw Vale—Caretakers' Ho., Alterations, &c., to Fire Statn. | Urban District Council | S J. Thomas, Town Surveyor, District Council Offices, Ebbw Vale. |
| „ 16 | Normanton—Alterations, &c., to Police Station | West Riding County Council | J. V. Edwards, County Architect's Office, County Hall, Wakefield. |
| „ 16 | Chaddeston—Library | Urban District Council | A. R. Groome & J. L. Grant, 2, St. Peter's Square, Manchester. |
| „ 18 | Bootle -Brick Wall, Stone Coping, and Piers | Corporation | B. J. Wolfenden, Borough Engineer, Bootle. |
| „ 20 | Portsmouth—School | Education Committee | G. E. Smith, 145 Victoria Road N., Southsea. |
| „ 21 | Hindley, Lancs—Wall | Urban District Council | A. Holden, Surveyor Council Offices, Hindley |
| 23 | London, N.—School Works | Tottenham Education Committee | G. E. T. Laurence, 23 Buckingham Street, Adelphi, W.C. |
| No date | Whittington Moor—Schools | —— | W. C. Jackson, 29, Knifesmith Gate, Chesterfield. |
| „ | Barrow-in-Furness—Conveniences | Corporation | C. F. Preston, Town Clerk, Town Hall, Barrow-in-Furness. |
| | **ENGINEERING** | | |
| Nov. 5 | Manchester—Laying Telephone Pipes | Paving, Sewering and Highways Committee. | City Surveyor, Town Hall, Manchester. |
| „ 5 | Chelmsford—Well | Rural District Council | J. Dewhirst, Engineer, Avenue Chambers, Chelmsford. |
| „ 5 | Swansea—Wooden Barge | Harbour Trustees | J. W. Shotton, 32 Mountstuart Square, Cardiff. |
| „ 6 | Chichester—Telephones | Corporation | J Pym-Jones, Engineer, Lion Street, Chichester. |
| „ 7 | Bridlington—Parade Extension Works | Corporation | E. R. Matthews, Borough Engineer, Town Hall, Bridlington. |
| „ 7 | Dublin—Railway Stores | Gt. Northern Ry. Co. (Ireland) | T. Morrison, Secretary. Amiens Street Terminus, Dublin. |
| „ 7 | Wakefield—Generator | Town Council | City Electrical Engineer, Calder Vale Road, Wakefield. |
| „ 7 | Hamilton, Scotland—Stone Bridge | Lanark District Committee | W. L. Douglass, District Engineer, District Offices, Hamilton. |
| „ 7 | Cashel, Ireland—Fire-hose | Guardians | T. Beary, Clerk, Workhouse, Clonmel. |
| „ 9 | Baldock—Borehole | First Garden City, Ltd. | G. R Strachan, 7 Victoria Street, Westminster, S.W. |
| „ 9 | Yeovil—Laying Pipes | Corporation | T. & C. Hawksley, 30 Great George Street, Westminster, S.W. |
| „ 9 | Beckenham—Free Wiring | Urban District Council | R. P. Wilson, 66 Victoria Street, Westminster, S.W. |
| „ 10 | Limerick—Heating Workhouse | Guardians | Clerk, Union Workhouse, Limerick. |
| „ 10 | Letterkenny, Ireland—Steam Economisers | Donegal District Asylum | Dr. Moore, Resident Medical Superintendent, Asylum, Letterkenny. |
| „ 11 | Leytonstone—Refrigerating, &c., Plant | West Ham Union Guardians | F. E. Hilleary, Clerk, Workhouse, Leytonstone, N.E. |
| „ 12 | Ashford, Middlesex—Well | Managers, W. Lon. School Bd. | G. M. Taylor, 27 Great George Street, Westminster, S.W. |
| „ 14 | Blackpool—Traction Set | Elec. & Tramways Committee | C. Furness, Borough Electrical Engineer, Elec. Works, Blackpool. |
| „ 14 | Radcliffe, Lancs—Electric Lighting, &c. | Urban District Council | S. Mills, Clerk, Council Offices, Radcliffe. |
| „ 16 | Llanwrtyd Wells, Brecon—Reservoir, &c. | Builth R.D.C. | R. L. Bamford, Surveyor, Wildemarsh Street, Hereford. |
| „ 16 | Bristol—Bridge | Docks Committee | W. W. Squire, Engineer, Cumberland Road, Bristol. |
| „ 17 | Linlithgow—Waterworks | District Committee | W. A. Tait, 72A George Street, Edinburgh. |
| „ 17 | Rangoon—Screw Pile Wharf | Port Commissioners | O. Gillanders & Co., Sun Court, 67 Cornhill, E.C. |
| „ 18 | Kilmarnock—Plant | Corporation | Town Clerk, Kilmarnock. |
| „ 20 | Wednesbury—Electric Lighting | Corporation | F. J. Warden-Stevens, 34 Victoria Street, Westminster, S.W. |
| „ 23 | Rochford—Water Supply Works | Rural District Council | H. T. Sidwell, Council's Engineer, Rochford, Essex. |
| 25 | Horwich, Lancs—Reservoir, &c. | Urban District Council | P. Taberner, Clerk, Council Offices, Horwich. |
| „ 31 | Sowerby Bridge, Yorks—Trade Effluent Purification Works | Asquith Bottom Dyeworks | Spinks & Pilling, 20 Park Row, Leeds. |
| Dec. 1 | Windsor—Public Lighting of Town | Town Council | Town Clerk, 3 Park Street, Windsor. |
| „ 15 | New York, U.S.A.—Tunnels | Pennsylvania, New Jersey & New York Railway Co. | Chief Engineer, 20 West Thirty-fourth Street, New York City, New York State, U.S.A. |
| 15 | New York, U.S.A.—Tunnels under North River | Pennsylvania, New York & Long Island Railway Co. | Chief Engineer. 20 West Thirty-fourth Street, New York City, New York State, U.S.A. |
| „ 15 | New York, U.S.A.—Tunnels to Long Island | Pennsylvania, New York & Long Island Railway Co. | Chief Engineer, 20 West Thirty-fourth Street, New York City, New York State, U.S.A. |
| 15 | Los Andes, Chili—Railway | —— | Commercial Intelligence Branch, Board of Trade, 50 Parliament Street, S.W. |
| „ 30 | Sidney—Telegraph, Telephone & Electric Light Material, &c. | General Post Office | General Post Offices, Sydney, Melbourne, Brisbane, Adelaide Hobart and Perth. |
| „ 31 | Culiacan, Mexico—Electric Lighting | —— | Secretaria del Ayuntamiento, Culiacan. |
| 1904.<br>Jan. 19 | Rotherhithe and Radcliff—Footway Tunnel | London County Council | Engineer's Department, County Hall, Spring Gardens, S.W. |
| Feb. 1 | Cairo—Three Road Bridges over Nile | Ministry of Public Works | Commercial Intelligence Branch, Board of Trade, 50 Parliament Street, S.W. |
| | **FURNITURE:** | | |
| Nov. 5 | Kilkenny—Wire Woven Mattresses | Guardians | K. Comerford, Clerk, Workhouse, Kilkenny. |
| „ 9 | Canterbury—Furniture, &c. | —— | Clerk, Borough Asylum, Canterbury. |
| „ 19 | Downpatrick—Bedsteads | Down District Lunatic Asylum | S. Rea, Clerk, Asylum, Downpatrick. |
| | **IRON AND STEEL:** | | |
| Nov. 6 | Christiania—Steel | Norwegian State Department for Lights and Beacons. | Fyrvaesenets Kontar, Christiania. |
| „ 7 | Dublin—Railway Stores | Gt. Northern Rly. Co. (Ireland) | T. Morrison, Secretary, Amiens Street Terminus, Dublin. |
| „ 9 | Birmingham—Iron Escape Staircases | Guardians | W. H. Ward, Architect, Paradise Street, Birmingham. |
| „ 9 | Dublin—Rails, &c. | Gt. Northern Rly. Co. (Ireland) | T. Morrison, Secretary, Amiens Street Terminus, Dublin. |
| „ 9 | Harrismith, South Africa—Galvanized Iron Buildings | Town Council | Mordey & Dawbarn, 82 Victoria Street, Westminster, S.W. |
| „ 9 | Yeovil—Cast-iron Pipes | Corporation | T. & C. Hawksley, 30 Great George Street, S.W. |
| „ 9 | Canterbury—Ironmongery, &c. | —— | Clerk, Borough Asylum, Canterbury. |
| „ 10 | London, W.—Ironmongery, &c. | Acton District Council | D. J. Ebbetts, 57 High Street, Acton. |
| „ 10 | Derby—Railway Stores | Midland Railway Co. | A. Derry, Stores Superintendent, Derby. |
| „ 10 | London, W.—Steel Bridge Girders, &c. | Great Western Railway Co. | Engineer, Paddington Station, London, W. |

# Complete List of Contracts Open —*continued.*

| DATE OF DELIVERY. | WORK TO BE EXECUTED. | FOR WHOM. | FROM WHOM FORMS OF TENDERS MAY BE OBTAINED. |
|---|---|---|---|
| | **IRON AND STEEL**—*continued.* | | |
| Nov. 11 | Enfield—Fencing | Urban District Council | R. Collins, Surveyor, Public Offices, Enfield. |
| " 11 | Amsterdam—Wire, &c. | Netherlands Minister of Colonies | Mart-Nijhoff, The Hague. |
| " 13 | Birmingham—Stores | Water Committee | E. A. Lees, Secretary. 44 Broad Street, Birmingham. |
| " 14 | London, N.E.—Pails and Manholes Covers | Bethnal Green Borough Council | Chief Inspector, Public Health Dept., Town Hall, Bethnal Green. |
| " 16 | Middlesex—Wrought-iron Railings | Corporation | W. Welburn, Borough Surveyor, Town Hall, Middlesex. |
| | **PAINTING AND PLUMBING:** | | |
| Nov. 7 | Dublin—Lead, Oil, &c. | Gt. Northern Rly. Co. (Ireland). | T. Morrison, Secretary, Amiens Street Terminus, Dublin. |
| " 9 | Wakefield—Painting | Guardians | Master, Workhouse, Wakefield. |
| " 10 | Derby—Varnish. Colours, &c. | Midland Railway Co. | A. Derry, Stores Superintendent, Derby. |
| " 10 | Dublin—Plumbing, Gasfitting, &c. | Commissioners of Public Works | H. Williams Secretary, Office of Public Works, Dublin. |
| " 13 | Birmingham—Lead Piping, Pig Lead, Brushes, Paints, &c. | Water Committee | E. A. Lees, Secretary, 44 Broad Street, Birmingham. |
| | **ROADS AND CARTAGE:** | | |
| Nov. 5 | Ealing, W.—Making-up Roads | Town Council | C. Jones. Borough Engineer Town Hall, Ealing, W. |
| " 5 | Tunbridge Wells—Private Street Works | Town Council | W. H. Maxwell, Borough Engineer, Town Hall, Tunbridge Wells. |
| " 6 | Siddick, near Workington—Streets | St. Helens Colliery Co. | J. S. Moffat, 53 Church Street, Whitehaven. |
| " 9 | Kendal—Concrete Flags | Corporation | R. H. Clucas, Borough Engineer, Kendal. |
| " 9 | London, S.E.—Widening and Making-up Road | —— | R. Stewart, 24 Sloane Square, S.W. |
| " 9 | Fulham, S.W.—Wood Paving | Borough Council | F. Wood, Borough Engineer, Town Hall, Fulham, S.W. |
| " 10 | Barking, Essex—Street Work | Urban District Council | C. F. Dawson, Surveyor, Public Offices, Barking. |
| " 11 | London, W.C.—Paving | Westminster City Council | Works Department, City Hall, Charing Cross Road, W.C. |
| " 14 | Radcliffe, Lancs—Pitch and Oil | Urban District Council | W. L. Rothwell, Engineer, Council Offices, Radcliffe. |
| " 16 | London, W.—Tip Carts and Vans | St. Marylebone Borough Council | J. P. Waddington, Engineer, Town Hall, London, W. |
| 1904. Jan. 19 | Rotherhithe and Radcliffe—Carriageway | London County Council | Engineer's Department, County Hall, Spring Gardens, S.W. |
| | **SANITARY:** | | |
| Nov. 5 | Carlton, Barnsley—Scavenging, &c. | School Board | J. Carrington, Clerk, Barnsley. |
| " 5 | Nantwich—Removal of Nightsoil | Rural District Council | C. E. Speakman, Clerk, Union Offices, Nantwich. |
| " 6 | Worcester—Sewage-Disposal Works | Corporation | T. Caink, City Engineer, Guildhall, Worcester. |
| " 7 | Hipperholme, Yorks—Sewers, &c. | Urban District Council | F. Massie, Tetley House, Kirkgate, Wakefield. |
| " 9 | Anlaby—Pipe Sewer | Sculcoates R.D.C. | W. H. Wellsted, Engineer, Prince's Dock Chambers, Hull. |
| " 11 | Whitehaven—Drainage System and Sewers at Inn | Joseph Dalzells, Parton & Harrington Breweries, Ltd. | W. Carmichael, Architect, Parton, Whitehaven. |
| " 13 | Birmingham—Drain Pipes, &c. | Water Committee | E. A. Lees, Secretary, 44 Broad Street, Birmingham. |
| " 17 | London, E.C.—Sewer | Corporation | Engineer, Public Health Department, Guildhall, E.C. |
| " 24 | Belper—Sewage Outfall Works | Urban District Council | C. J. Lomax, 37 Cross Street. Manchester. |
| " 25 | Wanstead—Scavenging, &c. | Urban District Council | Clerk, Council Offices, Wanstead, N.E. |
| | **TIMBER:** | | |
| Nov. 7 | Dublin—Timber | Gt. Northern Rly. Co. (Ireland) | T. Morrison Secretary, Amiens Street Terminus, Dublin. |
| " 10 | Derby—Timber and Fencing | Midland Railway Co. | A. Derry, Stores Superintendent, Derby. |

# List of Competitions Open.

| DATE OF DELIVERY. | DESIGNS REQUIRED. | AMOUNT OF PREMIUM. | DEPOSIT REQUIRED FOR CONDITIONS, &C. | BY WHOM ADVERTISED. |
|---|---|---|---|---|
| Nov. 9 | Kilmarnock—Shops and Workmen's Dwellings | £15 15s., £10 10s. £5 5s. | —— | R. Blackwood, Burgh Surveyor, Market Bridge, Kilmarnock, Scotland. |
| " 9 | Skewen, Neath—Public Library | £10 10s. | —— | S. Jones, Clerk, Old Road, Skewen, Neath. |
| " 11 | Newport, Mon—Sewerage Scheme | —— | —— | T. S. Edwards, 24 Stow Hill, Newport, Mon. |
| " 14 | Tamworth—Public Library | £20, £10, £5 | —— | J. Matthews, Town Clerk, Bolebridge Street, Tamworth. |
| " 21 | Sunderland—Additions & Alterations to Town Hall | £100, £50, £25. | £5. | J. W. Moncur, Borough Engineer, Town Hall, Sunderland. |
| " 30 | Bray—Pavilion and Winter Gardens | £30, £15, £10, and 3 prizes of £5 5s. each. | —— | F. Bethell, E. Lee and P. MacDonnell, Hon. Secretaries, Town Hall, Bray. |
| Dec. 1 | Wakefield—Reconstruction of Cattle Market | £52 10s., £26 5s. | £2. | E. R. Langhorne, Clerk to Governors of Charities, Wakefield. |
| " 7 | Elgin—School Buildings (340 pupils) | —— | —— | H. Stewart, Clerk, Landward School Board, Elgin. |
| " 7 | Seily Oak, near Birmingham—Public Baths | —— | £1 1s. | A. W. Cross, 23 Valentine Road, King's Heath, near Birmingham. |
| " 16 | Lambeth—Public Library | —— | —— | H. J. Smith, Clerk, Town Hall Kennington Green, S.E. |
| 1904 Jan. 15 | Windsor—Police and Fire Brigade Stations | £26 5s. | £1. | E. A. Stickland, Borough Surveyor, Town Council Offices, Windsor. |
| Mar. 31 | Vienna—Machinery to Lift Boats on Canal | 100,000, 75,000 & 50,000 kronen. | —— | Austro-Hungarian Consulate-General, 22 Laurence Pountney Lane, E.C. |
| No date | Fraserburgh, Scotland—Hospital, &c. | —— | —— | W. Alexander, Burgh Surveyor, Fraserburgh. |
| " | Rochdale—School (Limited to Local Architects) | —— | —— | J. E. Holden, Secretary to Education Committee, Baillie St., Rochdale. |

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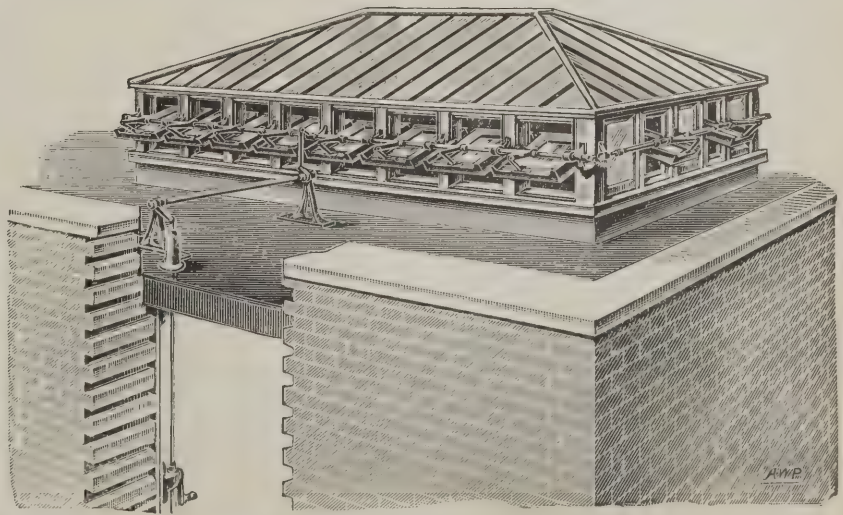

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ADVERTISER (33), a competent Surveyor and Draughtsman, with wide experience of construction and materials, offers his services temporarily for nominal salary in return for practise and expert instruction in quantity work. — Write "Practise," Builders' Journal Office, 6, Great New Street, Fetter Lane, E.C.

AN ARCHITECT has TIME to ASSIST others with Working Drawings, Details, and Perspectives at own office. Special terms for Competitions. Good general experience—Apply, H. L. Fedden, 11, Hart Street, Bloomsbury.

AN ARCHITECT is willing to assist others with designing working drawings from rough sketches, details, furniture delapidations, and superintending works, &c., at own office.—Frank Catling, 3, Featherstone Buildings, Holborn, W.C.

ARCHITECT'S ASSISTANT, six years' experience, requires engagement. Contract drawings, details, &c. Surveying, assistance with quantities. Box 2635, Builder's Journal Office, 6, Great New St., Fetter Lane, E.C.

ARCHITECT'S AND SURVEYOR'S ASSISTANT (22) desires change. Six years' London experience, four years in well-known office. Hospital and general work, working drawings, details, quantities, surveying. Moderate terms. London preferred. —H. J. B., 28, Weston Park, Crouch End, N.

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# Coming Events.

**Wednesday, November 4.**

SANITARY INSTITUTE (Lectures and Demonstrations for Sanitary Officers, Part I.).—Mr. J. E. Worth, M.I.C.E., on "Sewerage," at 7 p.m.

ARCHITECTURAL ASSOCIATION (Discussion Section).—Mr. H. Longden on "The Proper ,Treatment of Cast-iron," at 7.30 p m.

EDINBURGH ARCHITECTURAL ASSOCIATION.—Mr. A. Hunter Crawford, F.R.I.B.A., President, on "Haddon Hall," at 8 p.m.

GEOLOGICAL SOCIETY OF LONDON.—Meeting at 8 p.m.

**Thursday, November 5.**

CARPENTERS' COMPANY (Lectures on Sanitary Building Construction).—Mr. James Bartlett on "Superintendence of Buildings, Acts of Parliament, and Model By-laws," at 7.30 p.m.

LEEDS AND YORKSHIRE ARCHITECTURAL SOCIETY.—Annual General Meeting. Annual Report and Balance Sheet Exhibition of Students' Drawings, at 6 p.m.

CHEMICAL SOCIETY.—Meeting at 8 p.m.

**Friday, November 6.**

GLASGOW TECHNICAL COLLEGE ARCHITECTURAL CRAFTSMEN'S SOCIETY.—Professor Gourlay, B.Sc., A.R.I.B.A., on "Santa Sophia, Constantinople," at 8 p.m.

ARCHITECTURAL ASSOCIATION —Mr. C. A. Nicholson on "Modern Churches," at 7.30 p.m.

SANITARY INSTITUTE (Lectures and Demonstrations for Sanitary Officers, Part I.).—Mr. J. E. Worth, M.I.C.E., on "Sewage Disposal," at 7 p m.

INCORPORATED CLERKS OF WORKS ASSOCIATION.—Meeting at Carpenters' Hall, London Wall, E.C., at 8 p.m. Mr. John Davies on "The Carpenter: His Tools and His Work; in the Past and Present."

**Saturday, November 7.**

SANITARY INSTITUTE (Lectures and Demonstrations for Sanitary Officers, Part I.).—Inspection and Demonstration at Marylebone Workhouse and Public Bath, conducted by Mr. A. Saxon Snell, F.R.I.B.A., at 3 p m.

**Monday, November 9.**

THE SURVEYOR'S INSTITUTION.—First Ordinary General Meeting. Opening Address by Mr. Albert Buck, President, at 8 p.m.

SANITARY INSTITUTE (Lectures and Demonstrations for Sanitary Officers, Part I.).—Mr. J. E. Worth, M I.C.E, on "Scavenging and Disposal of House Refuse," at 7 p.m.

**Tuesday, November 10.**

INSTITUTION OF CIVIL ENGINEERS.—Prof. W. C. Unwin, B.Sc, F.R.S., M.I.C.E., on "Tensile Tests of Mild Steel, and the Relation of Elongation to the Size of the Test-bar." at 8 p.m.

ARCHITECTURAL ASSOCIATION (CAMERA AND CYCLING CLUB).—Mr. C. H. Oakden. F.R.P.S., on "Little-known Irish Abbeys," at 7.30 p.m.

**Wednesday, November 11.**

EDINBURGH ARCHITECTURAL ASSOCIATION (Associates' Section).—Mr. Ramsey Traquair on "Notes on later Scotch Gothic," at 8 p.m.

INSTITUTE OF SANITARY ENGINEERS.—Meetings of Examination Literature Committee at 3.30 p.m., of Joint Purposes Finance Committee at 4.15 p.m., of Election Committee at 5.15 p.m., and of Council at 7 p.m.

SANITARY INSTITUTE (Lectures and Demonstrations for Sanitary Officers, Part II.).—Mr. W. Hunting on "Signs of Health and Disease in Animals Destined for Food," at 7 p.m. Inspection and Demonstration at a Bakehouse at 3 p.m.

**Friday, November 13.**

BIRMINGHAM ARCHITECTURAL ASSOCIATION.—General Meeting. Mr. Charles A. Nicholson on "Modern Church Building," at 6 45 p.m.

**Saturday, November 14.**

GLASGOW TECHNICAL COLLEGE SCIENTIFIC SOCIETY.—Mr. Alexander Govan on "Motor Cars," at 7.30 p.m.

**Monday, November 16.**

THE SURVEYOR'S INSTITUTION (Junior Meeting).—First Meeting of Examinees and Students at 7 p.m.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.—Monsieur J. T. Homolle on "Le Trésor de Cnide et les Monuments de l'Art Ionien à Delphes," at 8 p.m.

**Tuesday, November 17.**

SOCIETY OF DESIGNERS.—Mr. Hugh Stannus, F.R.I.B.A, on "Ancient Architecture in Egypt," at 8 p.m.

**Wednesday, November 18.**

ARCHITECTURAL ASSOCIATION (Discussion Section).—Mr. S. Perks, A.R.I.B.A., on "Domestic Hot-water Circulation," at 7.30 p.m.

**Friday, November 20.**

THE INSTITUTION OF MECHANICAL ENGINEERS.—Ordinary Meeting at 8 p.m.

ARCHITECTURAL ASSOCIATION.—Mr. H. M. Cautley on "Farm Buildings," at 7.30 p.m.

GLASGOW TECHNICAL COLLEGE ARCHITECTURAL CRAFTSMEN'S SOCIETY.—Mr. James C Walker on "Planning and Construction of Burgh Buildings," at 8 p.m.

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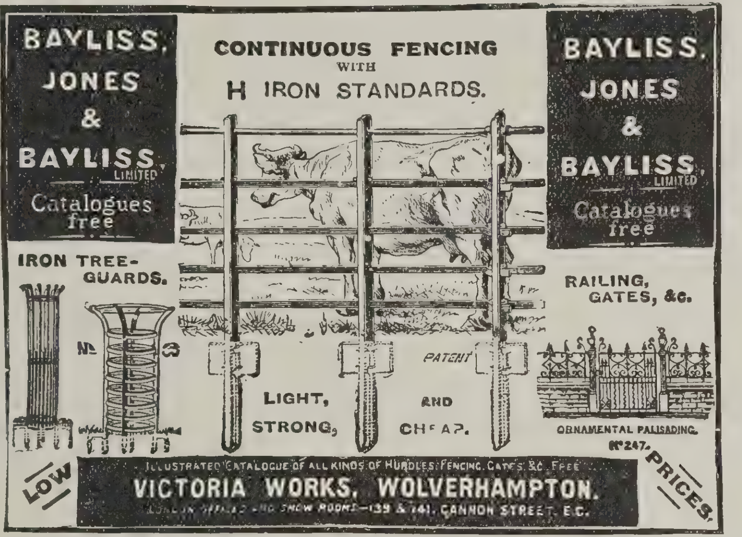
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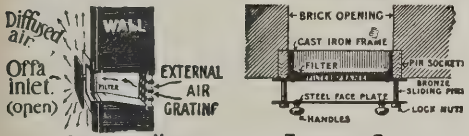

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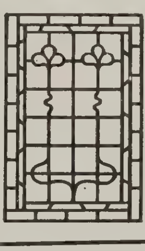

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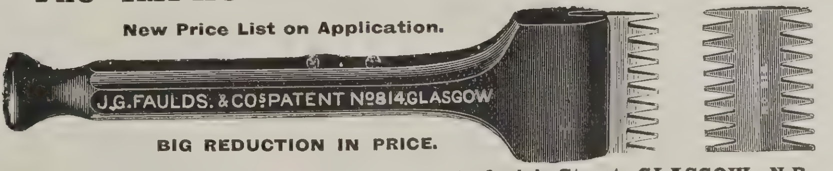
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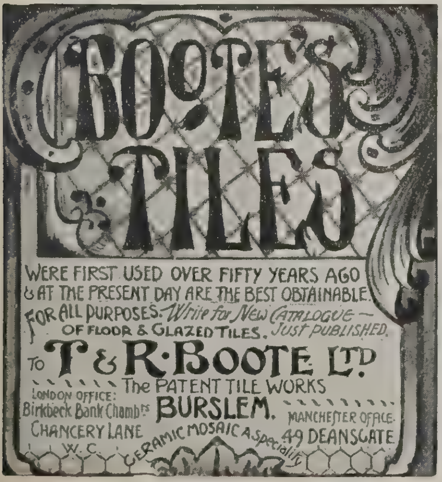
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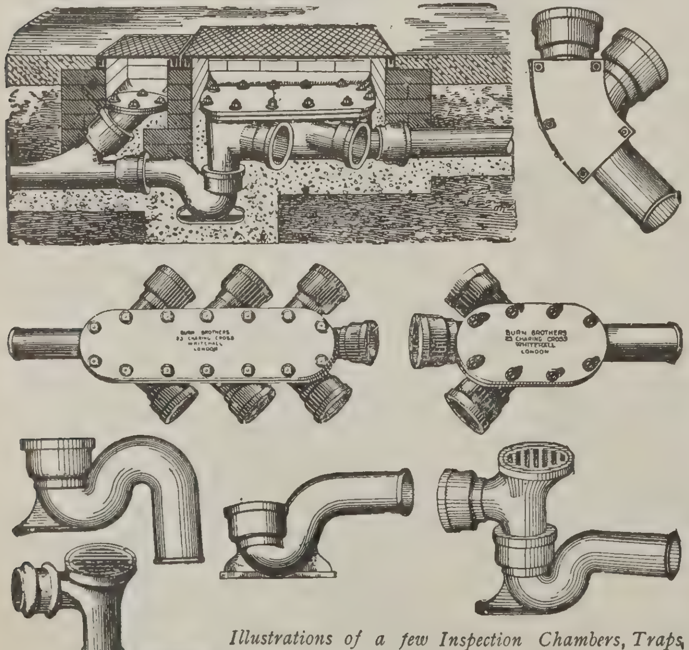

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# BUILDERS' JOURNAL

AND ARCHITECTURAL RECORD.

November 11, 1903. Vol. 18, No. 457. 6, Great New Street, Fetter Lane, E.C.

## Summary.

The awards in our competition for drawings of details of modern buildings are announced on p. 200. Twenty-seven line drawings and four in wash were received.

Mr. Silvanus Trevail, F.R.I.B.A., shot himself last Saturday while travelling in an express train between Lostwithiel and Bodmin Road. He had suffered recently from ill-health and depression of spirits. (Page 206.)

Messrs. Mackay, Newberry and Garstang, of Liverpool University, suggest that the Hyksos, or Shepherd Kings of Egypt, were Hittites, and that the Etruscans were offshoots of the race; in which case the Hittites would be raised from the oblivion of ages to a place among the great early nations of the world—one of the most astonishing revolutions in archæological history. (This page.)

We publish this week two drawings by the late Mr. H. W. Brewer, two by Mr. Raffles Davison and one by Mr. W. H. Bidlake, the first of a series of drawings by leading architectural draughtsmen for which we have made special arrangements. (Page 197.)

The King's Sanatorium, four miles north of Midhurst, will provide 100 beds, including accommodation for twelve well-to-do patients. (Page 206.)

Mr. Rushforth has resigned the directorship of the British School of Rome, owing to ill health, and Mr. H. Stuart Jones has been appointed in his place. (Page 206).

Before the Architectural Association last Friday Mr. C. A, Nicholson said modern church design had been evolved during the past century, and traced its rise to the Wesleys and Tractarians, the toleration of all forms of religion and general commercial prosperity. Architecturally the great invention of recent years was the cheap church. The cheap church of fifty years ago was ornate, but shoddily built. Twenty years ago economy was effected by building substantial churches of the cheapest and ugliest materials. "Where funds are limited it seems better to adopt an economical plan from the outset, spending the available funds upon sound building, and some degree of finish in the details. Economy may be effected by avoiding undue multiplication of parts, and by disposing the section of the church in such fashion as to secure an agreeable proportion in each of its alleys without undue expenditure of material." (Page 201.)

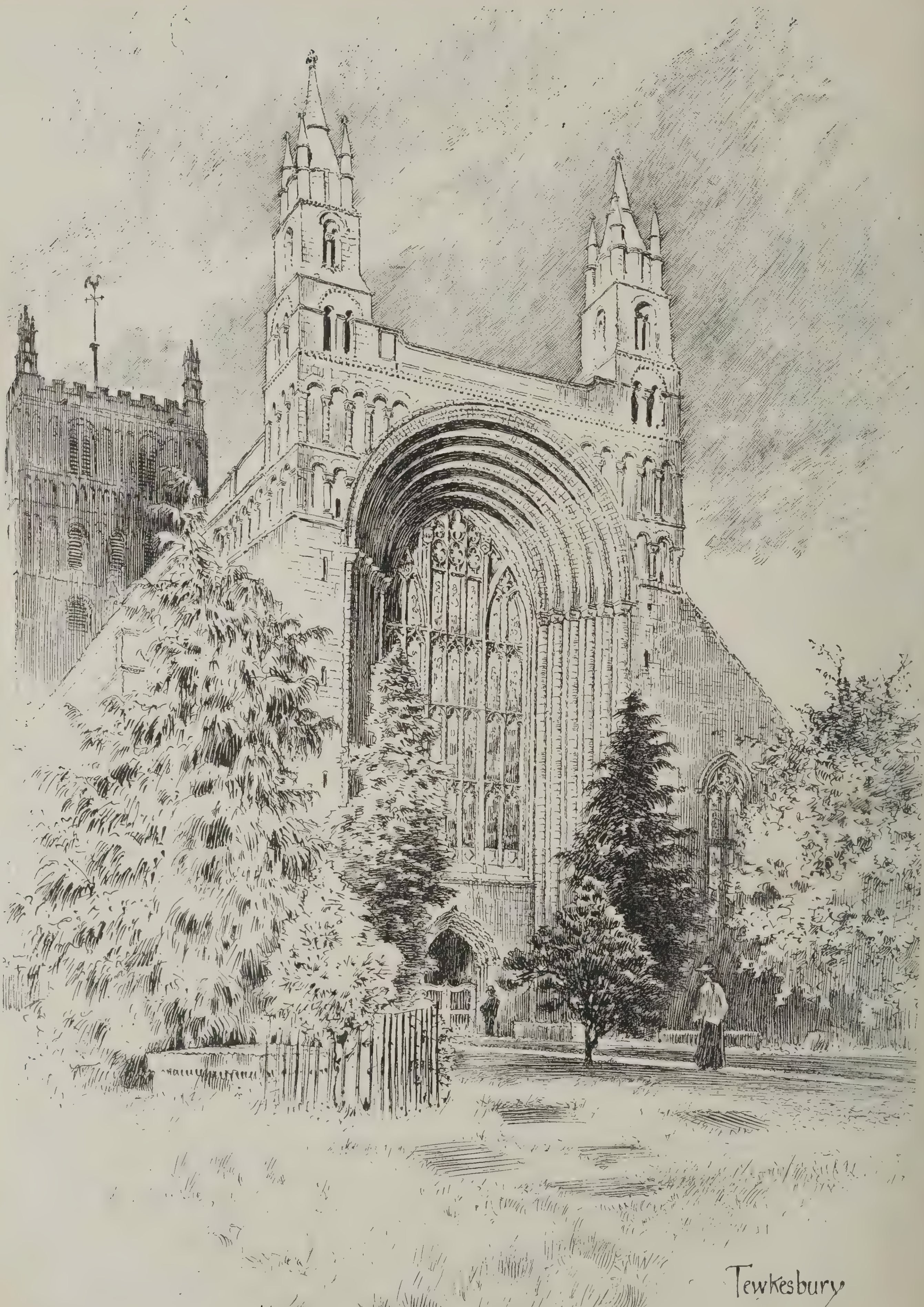
A replica of "La Danaïde," one of Rodin's finest works, is now on exhibition at South Kensington. (Page 206.)

The rebuilding of "Bart's" will include additional operating theatres, new casualty and out-patient departments, new nurses' home, new quarters for the resident medical and surgical staff, new mortuary post-mortem rooms and pathological department: besides internal structural rearrangement of the east, west and south wings. (Page 206.)

**Mr. Yerkes's Chimney Builders.** Mr. Yerkes's manager has been well refuted for saying that English workmen cannot build chimneys from the inside, as his German workmen are doing in the chimney now being erected for the new District Railway generating station at Lot's Road, Chelsea. Such a statement was absurd. German workmen are just as fat and heavy as our own, and require just as much scaffolding to hold them up; while, as for agility and intrepidity, we do not suppose any workmen surpass our own scaffold fixers.

**The Two Greatest Problems of Archaeology.** It has never yet been settled who were the forerunners of the Hyksos in Egypt and the Etruscans in Italy; the former constituting the Shepherd Kings who supplanted the Pharaohs for about five hundred years, and then faded away before the Assyrians. It is now suggested by Mr. Mackay, Mr. Newberry and Mr. Garstang, of Liverpool University, that the Hyksos were Hittites and the Etruscans offshoots of them; in which case, the Hittites, of whom so very little is known, and that little chiefly associated with jingling names in Holy Writ, would be raised to a position among the great early powers of the world. The relation of art and architecture to such a proposition will be apparent, for it quite alters pre-conceived ideas as to the origins of certain forms. Prof. Flinders Petrie, however, assures us that the suggestion is by no means new, having been threshed out ten years ago by De Cara, though without any definite result: while Major Conder says he himself put forward the theory in 1887, before De Cara had written anything of it. Prof. Sayce observes that "one of the paths by which the art and civilization of Babylon and Assyria made their way to Greece was through Asia Minor"—the country of the Hittites—and that "on an outer wall of the temple of Karnak the treaty of peace between Egypt and Khitaland (Hittite land) may still be read." But Professor Petrie has little faith in the idea that the Hyksos were Hittites, and contends that the question really open to debate is the similarity between Hittite and Etruscan details. Whether that connection will be established remains to be seen; if so, it would be an astonishing raising of the Hittite race from the oblivion of ages. As the "Times" says, the revolution would be little short of stupendous if it could really be shown that one and the same race which but yesterday was merely a half-forgotten name had inhabited Canaan before the Israelites, had ruled Egypt for several dynasties, had withstood its power even in the days of the great Ramses, had disputed the sovereignty of the East with Assyria, had profoundly influenced the early civilization of Greece, and had held its own for a time against the growing power of Rome.

**Inspectors for Dangerous Buildings.** The report of Mr. Henry Price, the city architect of Manchester, on the inspection of dangerous buildings shows what inadequate provision is made for this work in a great city; and, remembering the terrible collapse in Ancoats of which it is the outcome, other corporations would do well to look to their own departments. At the present time there is only one inspector for dangerous buildings in Manchester, and his duties cover the whole city; moreover, it is only possible for him to deal with dangerous properties to which his attention is called by the police and sanitary departments, and under the present system his time is so fully occupied that he cannot make anything like an inspection of any district with the object of finding out dangerous property. In Manchester during the last three months 330 reports were received from various sources, necessitating 450 visits, or about six a day; 244 preliminary notices were served as the result of these visits, and twenty-seven notices under the Public Health Acts sent to various owners. Dangerous building work is such as to require immediate and continued attention until the danger is removed, and a casual inspection of the various quarters of the city is sufficient to convince anyone, as the city architect has been convinced, that this work is at present inadequately performed, not on account of any failing on the part of the inspector employed, but by reason of the large area covered and the increasing number of dangerous buildings. On the subject of general building inspection under the by-laws, Mr. Price says, very rightly, that this should be regular and frequent. The exigencies of the work are such that defects are quickly covered up and lost sight of, and complaints are frequently made that errors and non-compliance with the building by-laws are discovered at a time when it will cost the builders considerable expense. Under the present method of inspection in Manchester there is a division of responsibility. In the event of the inspector failing to do his work efficiently he is able to place the responsibility upon the shoulders of the chief building inspector, who in his turn endeavours to fix it upon the inspector. Mr. Price expresses himself strongly on this point—that each inspector should first of all be held responsible for his own district. The Corporation will doubtless see to this.



DRAWINGS OF ARCHITECTURE: BY T. RAFFLES DAVISON.

# DRAWINGS OF ARCHITECTURE.

### Our New Series.

FOR some time past we have been making arrangements for the publication of a series of drawings of architecture by well-known men. This series, we hope, will be thoroughly representative of the methods adopted by the leading architectural draughtsmen of the day, not only in this country but also on the Continent and in America. For the present we are confining our attention to draughtsmen in this country.

We publish in this issue two drawings by the late Mr. H. W. Brewer, two by Mr. Raffles Davison and one by Mr. W. H. Bidlake; other drawings in hand or promised will be by—

Mr. C. E. Mallows,
Prof. Beresford Pite,
Sir Lawrence Alma-Tadema,
Mr. E. H. New,
Mr. R. Phené Spiers,
Mr. J. B. Fulton,
Mr. Geoffry Lucas,
Mr. Muirhead Bone,
Mr. A. N. Prentice,
Mr. C. W. English,
Mr. Arnold Mitchell,
Mr. E. A. Rickards,
Mr. Reginald Blomfield,
Mr. Percy Wadham,
Mr. Walter Millard,
Mr. Patten Wilson,
Mr. F. L. Griggs,
Mr. George C. Haité,
Mr. C. A. Nicholson,
Mr. Francis Hooper.
Mr. M. H. Baillie Scott,
Mr. H. Raine; and
Mr. A. Wallace Rimington.

Arrangements with other well-known draughtsmen are in progress.

It will be seen from these names that the collection of drawings will be a most valuable and interesting one, especially as representing modern draughtsmanship; indeed, we venture to think that it will be far and away the best collection of its kind obtainable; so that we shall feel well repaid for the trouble and expense entailed in bringing it together.

We do not propose to publish any formal series of articles to accompany the drawings—these speak for themselves, and it would be of little avail to describe them in detail: a few commentatory notes shall suffice. Thus, in regard to the two beautiful drawings by the late Mr. Brewer published in our centre plates this week, we would mention that the originals are outlined in pen-and-ink and washed over in monochrome, some body colour being used to give depth to the foliage and a little white to heighten the high lights. From his published drawings the late Mr. Brewer is almost exclusively known as a line draughtsman; but with all respect we would say that his line technique is rather scratchy; and though we are very grateful to him for the wonderful drawings which he made in line, setting before our eyes the buildings of centuries ago, his actual line technique is not highly skilful. But in his wash-work, such as the two examples which we publish, there is a wonderful "feeling" for his subject that makes them really beautiful drawings, far superior to those in line by which, as we have already said, he is chiefly known.

With regard to Mr. Raffles Davison, in his case the proverb that "imitation is the sincerest form of flattery" is peculiarly illustrated: for there is no draughtsman whose methods are more copied by architects—though they never reach his excellence. The drawing of Tewkesbury Abbey is a most delicate piece of work—the original in a brownish ink—and shows the hand of a master in its arrangement of blacks and the treatment of the stonework. The trees, too, are excellently rendered, which, in an architectural drawing, is a very rare thing. The pen-and-ink sketch of Hanley Castle Church on p. 199 is notable for the excellent feeling of sunlight which Mr. Davison has given—so skilfully rendered that we seem to feel it warming us.

Mr. Bidlake's drawing of St. Nicholas's Church, Leicester (reproduced on the next page), is a very direct piece of work, exhibiting that freedom with the pen which is so difficult to acquire. Mr. Bidlake, however, is better known for his pencil drawings. Of these we have two examples in our possession, one a most beautiful drawing of Lincoln. We shall publish it soon, and we think our readers will regard it as a very valuable and delightful addition to this series.

# MR. CHAMBERLAIN AND THE BUILDING TRADE.

IN the course of his speech at Birmingham last week Mr. Chamberlain referred to the building industry and its relation to his proposed tariffs. He said:—

I observe that Sir William Harcourt has been looking at the Blue-book, and not only that, but he has taken advantage of passing through Birmingham in a railway carriage to make observations as to our commercial position. What he says, in effect, is: "It may be that some industries are decaying, but then others are growing. As I passed through these places I saw evidence of enormous activity on the part of the building trade." I had a letter from a builder in Derby, who says: "In Derby a great number of men are out of employment in the building trade"; but really that does not affect the argument. The building trade—what does it mean? When the tinplate trade is bad, are the tinplate operatives to start laying bricks? But what an illustration, what an unfortunate illustration it would be! Why, the building trade is one of the few trades in this country which is protected not by legislation but by the circumstances, the necessary circumstances, of the trade, and the regulations of the trade. Have you ever heard—there may be a case, but I do not know of it—have you ever heard of a foreign contractor, say an Italian builder, coming over here and competing with British builders to build houses or public buildings, or manufacturers bringing over with them their own labour at, let us say, 1s. to 2s. 6d. a day, and accordingly contracting for much lower prices? My latest experience is that of the Birmingham University. We put forward our specifications and asked for tenders, and no foreigner offered to compete; and accordingly if the progress of the building trade is to be quoted at all it tells in favour of protection, and not in favour of free trade. As I have said, by natural circumstances the building trade is protected, and if there were to be such an incident, if a foreign contractor were to come over from some country where labour is cheap and bring that cheap labour to build our University or anything else, I think he would find himself in a very difficult position. I say then that it is childish, absolutely childish, to suggest to you either, in the first place, that a decaying industry can transfer all its capital and all its labour to the building trade, or to some other prosperous industry; and, in the second place, it is absurd to suppose an industry in the condition of the building trade is any argument whatever in favour of free imports. If you had taken building materials that would have been a very different thing. I think those who make—well, all the details of house furniture, those who make iron girders for supporting your floors and roofs, those who in former times—at any rate, those joiners and carpenters who make doors and window frames—they perhaps would have a different tale to tell. While the builder's trade, as a contractor's trade, as I have said, is naturally protected, there is no protection at all for the material which goes into the business.

# Enquiries Answered.

*The services of a large staff of experts are at the disposal of readers who require information on architectural, constructional or legal matters. Questions should in all cases be addressed to the Editor. The querist's name and address must always be given, not necessarily for publication.*

### Chimneys overtopped by New Building.

PAISLEY.—CORK writes (our letter to him comes back "not known"): "I am the owner of a house that has been built for upwards of sixty years. The owner of the adjoining land builds and carries his building higher than mine, interfering with the draught of my chimneys. What remedy have I; can I insist on his raising my chimneys to my reasonable satisfaction?"

If you are in a position to prove that the draught of the chimneys has been injured by your neighbour's building, you are entitled by English law to claim to be placed in as good a position as before. I should imagine that Scottish law is the same in this respect, but regret I am unable to state positively that such is the case. F. S. I.

### Gravel Tennis Courts.

LONDON, W.—F. C. writes: "Kindly give some information concerning the making of gravel tennis courts."

Length of side lines 78ft., of base lines 36ft., of service line 27ft. (at 21ft. from the net). There is no special method of making a gravel tennis court, except that particular care should be taken to secure a sound bed with sufficient drainage. For this purpose a well consolidated foundation of 6in. to 8in. of clinkers, or other suitable hard material, should be laid upon a bottom slightly sloped from the centre to each base line, and a thickness of from 1½in. to 2in. of gravel spread upon it, the whole being repeatedly rolled to a level surface. If the soil is of impervious character, a shallow drain—say 10in. or 12in. below the gravel—laid round the court will be of advantage; it may be of ordinary unglazed butt-jointed agricultural drain pipes of about 3in. diameter.

F. S. I.

### Surveyor as Arbitrator.

STOCKBRIDGE.—NOVICE writes: "(1) Under the Arbitration Act of 1889, can a surveyor or architect accept the position of sole arbitrator in the matter of a dispute between employer and builder, who are both quite willing to accept his judgment, as to what would appear to be an excessive charge for labour, the surveyor having prepared the plans only, and the arrangement as to the actual building being entirely a matter between the employer and builder, and of a verbal character? (2) If so, would this be considered an arbitration or a valuation, seeing that it is not so much a question of the actual labour bill to be valued, but as to the amount or proportion of loss each party should bear, considerable loss having been incurred owing to the fact of there being no proper signed contract? (3) Can the surveyor who would be appointed arbitrator make an award in such a matter, even assuming that it might be of the nature of a valuation, without holding a valuer's licence?"

(1) He can certainly accept the position if both parties agree, but a proper submission

DRAWINGS OF ARCHITECTURE: ST. NICHOLAS'S CHURCH, LEICESTER, BY W. H. BIDLAKE.

to arbitration must be drawn up. (2) The decision of the arbitrator is not a valuation, but an award. (3) As the decision of the arbitrator is not a valuation, but an award, I am of opinion that no valuer's licence is necessary. ELLIS MARSLAND.

### Projections Beyond Frontage Line.

LONDON, W.C.—S. C. C. writes: "What is the general custom with regard to projections beyond the frontage line, applying chiefly to porches and bay windows?"

Your enquiry is not definite enough for us to reply fully. Rules as to projections beyond frontage line will be found in section 73 of Part VI. of the London Building Act, 1894.

### Brickmaking: Lettering: Boundary Line of Property adjoining Road.

ENQUIRER writes: "(1) Which is the best book (not too expensive) on brickmaking; (2) also on lettering and printing? (3) Can a candidate after failing once for the M.S.A. examination go in for it again? (4) If a piece of land is divided from a road by hedge and ditch, the ditch being next to road, and the owner of the land wants to cut down the hedge, pipe and fill in ditch and build a boundary or garden wall, where does his boundary come for building? Does the ditch belong to him or to the local urban council?"

(1) A cheap book is "Bricks and Tiles," by E. Dobson (3s.), but Sampson Low's "Practical Treatise on the Manufacture of Bricks, Tiles, Terra-Cotta, &c." (price 25s.) is the best book. (2) "Alphabets, Old and New," by Lewis F. Day (price 3s. 6d.). (3) Yes; full particulars can be obtained from the Secretary, St. James's Hall, Piccadilly, W. (4) It depends upon who dug the ditch and planted the hedge. If the present or past owners did, the boundary is at the edge of ditch next the road, but in your case it seems more probable that both hedge and ditch, or at any rate the ditch, belong to the local authority. See *Queen* v. *Bradley* (Queen's Bench, March 7th, 1894).

### Footings Encroaching on Adjoining Property.

LONG EATON.—X. writes: "A has a plot of land, B has another adjacent. A has built a house, one side of which is the extremity of his boundary. A's footings intrude 4in. on B's land. B saw them being laid at the commencement of the work; and, now the building is completed, says he wants £6 as compensation for encroaching on his land. As A was quite ignorant of the matter, this has come on him unexpectedly. He has tried to come to terms with B, but B will not accept any terms except the amount stated, which A thinks is extortionate. A is willing to buy the land, which amounts to about 12s., or have his footings chopped, but B will not agree to this. What should A do?"

As B appears to be acting in an unreasonable manner and has refused to allow A to cut off the projecting footings, I believe he has considerably weakened his position with regard to this encroachment, and I should think A would now be quite safe in letting the matter slide. A should, however, take care he has proper evidence (documentary, if possible) (1) that he offered to remove the encroachment, but that B refused to allow him to do so; (2) that he has tendered a reasonable sum as compensation—say the full value of the 4in. strip of land; and then I consider he may await with equanimity any action that B chooses to take. If, however, B subsequently shows a disposition to settle the matter, I advise A to pay more than the amount which he considers equitable, as even £6 will not go very far in solicitors' costs. F. S. I.

### Measuring up and Estimating for Wall.

LONDON, S.E.—SUBSCRIBER writes: "Which is the best method of measuring up the boundary wall shown by the accompanying drawing (not reproduced), and what would be an approximate price per rod, &c., to charge in order to ascertain the cost when erected? Steps are to be formed in the excavations, and the wall is to be built up in sections. It will be composed of best red facing bricks, special plinth and coping bricks."

The method of measuring this wall is described in any work dealing with quantity surveying. The only special point to be noted is that the 9in. panels being faced both sides should be measured as such at per foot super., as the headers being faced both ends entail some extra cost in selection for uniform lengths to show a fair face on both sides. Without some idea of the quantity, it is difficult to give even an approximate estimate of the cost, but the following may be taken as a rough guide:—

| | |
|---|---|
| Excavating and wheeling within one run - | 1s. 6d. per yd. cube. |
| Cement concrete - - | 16s. 6d. " |
| Brickwork in 14in. work and footings in mortar | £16 per rod. |
| If in cement add - - | £2 per rod. |
| Facing each face - - | 3d. per ft. super. |
| 9in. wall faced both sides - - - | 1s. 4d. " |
| Extra for splayed plinth and oversailing courses | 4d. per ft. run. |
| Coping (labour and materials) and core to same - - - | 1s. 6d. " |

W. E. D.

### Royal Arms as a Sign.

DUNDEE.—A. B. S. writes: "While it is very common to call an hotel 'The King's Arms,' would it be legal to paint or inlay the 'arms' on a sign-board or on any part of the building? If so, how should the different quarters be filled in as relative to Scotland?"

It is unlawful for anyone to make use of the Royal arms unless he holds a warrant from the King, a member of the Royal Family, or from a Secretary of State. But this is of general application. The question has never been raised in connection with licensed houses, which, in practice, do make use of the armorial bearings. It opens up an interesting question: whether, the house being licensed by the justices by the name of the "Royal Arms," this does not *ipso facto* give a right to the use of the natural symbolical sign. In any case, if the arms are painted on a sign-board, with some conventional symbols, no objection would be raised. As regards the marshalling, from 1603 to 1707 the Scottish lion was given precedence within Scotland; that is to say, the red lion rampant within its tressure on a gold field was painted in the first and fourth quarters, the English gold lions on a red field occupying the second quarter, and the Irish harp on its blue field occupying the third. But this procedure was abrogated by the Act of Union of 1707, with the single exception of the marshalling on legal seals. There has, however, been much controversy on the point. The best authorities give a modified precedence to Scotland within the Scottish kingdom. The arms themselves are marshalled in the usual way (*i.e.*, first and fourth quarters England, second Scotland, third Ireland), but the supporters are reversed; that is to say, the silver unicorn of Scotland is placed on the dexter side (heraldic right-hand) and the English lion on the sinister side. This is the better course to adopt. Do not use the garter round the shield, and you might diaper the old gold background of the signboard with very small thistles (violet flowers and green leaves).

G. C. R.

### Green Floor Tiles.

REIGATE.—S. writes: "What is the usual colouring pigment used in the manufacture of green flooring tiles—not the dipped ones, but those in which the colour permeates the body? Are there any books or articles dealing with the subject?"

It is not usual for floor tiles to be coloured green all through, and we do not know of any regularly on the market at present. The colouring matter generally used to produce a green body in pottery is oxide of chromium, from ·5 to 1 per cent. A bluish green is made with a mixture of cobalt and chromium. A good book on the subject of glazes, pottery, earthenware, terra-cotta, &c., is "Architectural Pottery," by Leon Lefévre, to be obtained from these offices, post free 15s.

### Assistant Surveyors, R.E.

NOTTINGHAM.—A. E. W. writes: "Who is the proper person to apply to for information regarding the examinations for assistant surveyor, civil staff of the R.E.?"

The Secretary, Civil Service Commissioners, 68, Victoria Street, S.W.

### Fungus in Floor.

CIRENCESTER.—T. C. J. writes: "What should be done with a floor in which fungus growth like dry-rot has occurred round the skirting and is beginning to attack the floorboards? Fungus occurs in the brickwork also. There is a good depth under the floor and concrete under that. It is only three or four years since this part of the house was built."

The rot may be traced to want of ventilation under the floor and damp rising or coming through the wall. We advise you to put in a number of air-bricks to ventilate under the floor. Coat the rotting timber with "Carbolineum Avenarius," and tar the brickwork inside and out.

### Building Construction.

GREENWICH. — E. S. writes: "Please mention (1) some books at reasonable prices that would explain and help me to understand the formulæ in Mitchell's 'Advanced Building Construction.' Unfortunately I have only a very limited knowledge of algebra. (2) Also, is it necessary to master all the formulæ in this book?"

Study the articles on "Building Construction" which recently appeared in our columns, and get "Technical Arithmetic and Geometry," by C. T. Mills (Methuen & Co., price 3s. 6d.), which is a simple book that will give you all you need in this way. (2) Yes, certainly it is necessary to master the formulæ if you propose to become a practical architect.

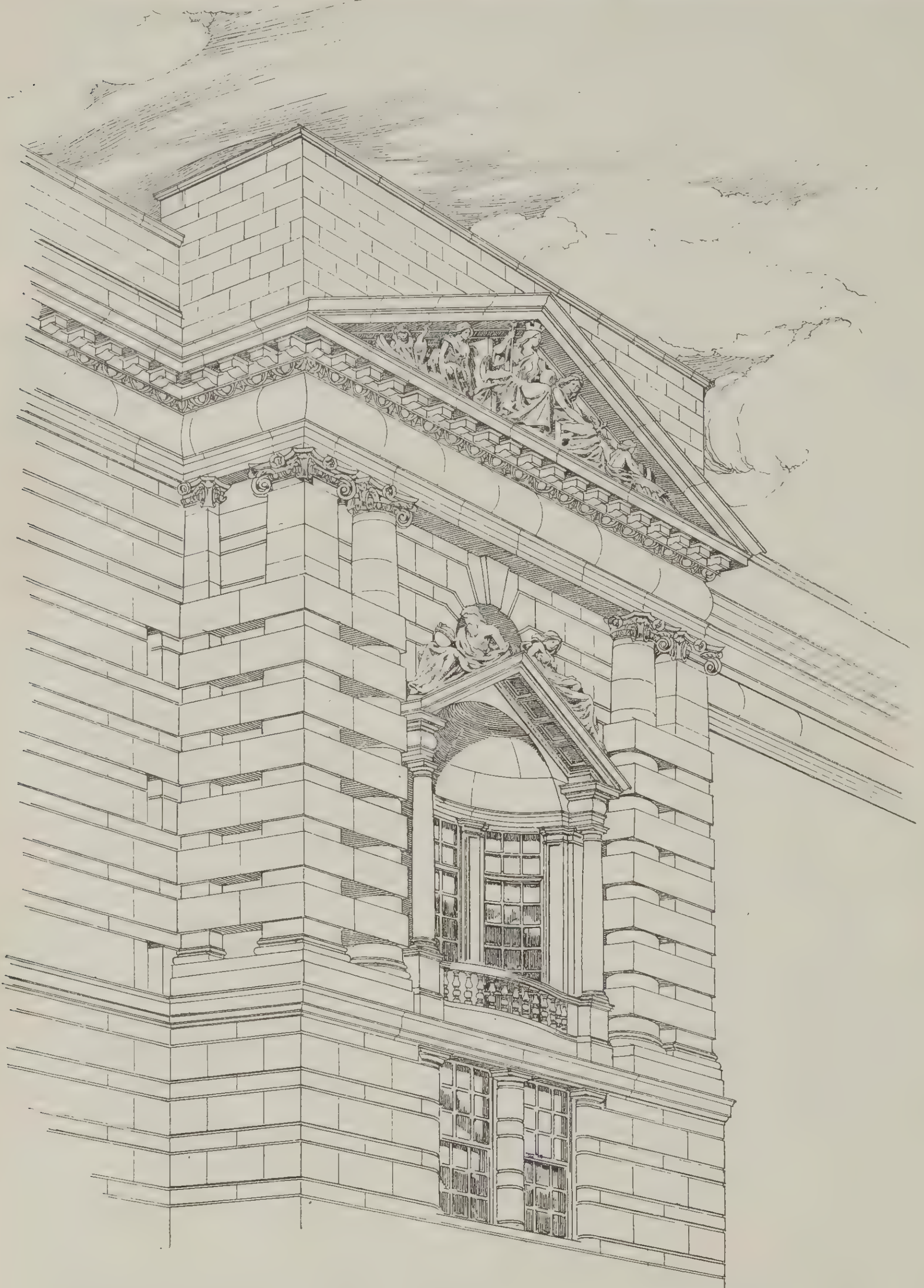
### Boston Church, Norfolk.

EAST HARLING.—W. T. L. writes: "Of what order of architecture is the masonry work at Bolton Church, Cawston, Norfolk, and is it correct? From what I can learn, the work has been going on for several years under the supervision of the late vicar, and the masonry work let out to different masons. I wish to make several sketches."

I know of the church, but have never been sufficiently interested to go to Boston (I suppose it is Boston, not Bolton as your correspondent writes) to see it. It is known amongst laymen as a remarkable edifice for the reason that the Rev. Whitwell Elwin, the rector, was so remarkable a man himself. He was editor of the "Quarterly Review" for some years, I believe. He decided to rebuild the church from his own designs by aid of local workmen. It has two western towers of slender outline; they are set diagonally on plan. The style is either Early English or Decorated, but I judge it is not the kind of work one would learn much from. There is much better architecture to sketch near East Harling than this.

GEORGE J. SKIPPER, F.R.I.B.A.

DRAWINGS OF ARCHITECTURE: BY T. RAFFLES DAVISON.



LIVERPOOL TECHNICAL SCHOOL AND MUSEUM. E. W. MOUNTFORD, ARCHITECT.
PRIZE DRAWING, BY GEORGE G. POSTON.

# Law Cases.

**Ancient Lights as affecting Cottages.**—The case of *Ruscoe* v. *Grounsell* was recently heard in the Court of Appeal. The appellant was the owner of two cottages at Louth, in Lincolnshire, and he brought this action against the respondent, who owned land on the western side of the cottages, to restrain him from interfering with the free access of light to the windows of the cottages. Up to 1891, and for more than fifty years before, the land had been used as an open yard. In 1891 the respondent erected a shed less than a foot from the windows of the cottages. That shed, which was 48ft. long and 7ft. high, seriously obstructed the light. The respondent claimed that there had been an agreement in writing, within section 3 of the Prescription Act, which excluded the appellant from setting up a claim to ancient lights, and in support of that contention he relied on a tablet set in the respondent's wall, on which was engraved as follows: "1816. This stone is placed by John Atkin to perpetuate John Musgrave's right to build within nine inches of this and any other building." It was admitted that the cottages had been built before 1816. Mr. Justice Lawrence was of opinion that the tablet prevented the appellant from acquiring a right to light, and gave judgment for the defendant.—The Lord Chancellor, in delivering judgment, said the appeal must succeed. The appellant had proved that the light to the windows had been enjoyed for fifty years, and the *onus* fell on anyone wishing to disturb that right to show that he had not acquired a right by prescription to a continuance of it. Those who sought to do that must establish that a continuance of the right to light had been prevented by that which the Prescription Act, 2 and 3 William IV., c. 71, required to be done in order to defeat the right, namely, that it was enjoyed by some consent or agreement expressly made or given for that purpose by deed or writing. He would assume that the tablet on which the respondent relied was an agreement in writing. The question remained whether it expressly reserved the right, and was given for that purpose. Looking at the possible reasons why the parties might have agreed to put the writing there, he was unable to hold that it was in the minds of the parties to reserve to Musgrave the right to interfere with the access of light to the cottage windows. There might well be a number of reasons why the writing had been placed where it was, and looking at all the facts and especially to the mention of the "nine inches," he was wholly unable to come to the conclusion that it was a right expressly reserved for that purpose. The Lord Chief Justice and Lord Justice Cozens Hardy concurred, and the appeal was allowed with costs.

# OUR COMPETITION FOR DRAWINGS.

TWENTY-SEVEN line drawings and four wash drawings of details of modern buildings were sent in for our competition. These were received from Birmingham, Bolton, Bradford, Chester, Edinburgh, Leeds, Liscard, Liverpool, London, Oxford, Sheffield, Sidmouth, South Woodford, Southport, Stonehouse and Tonbridge. We cannot say that any one of them is of exceptional merit, and many of them are frankly poor specimens of work. The best of the line drawings, in our judgment, is that of the Liverpool Technical School and Museum by

MR. GEORGE G. POSTON,
24, Denton Drive,
Liscard, Cheshire,

to whom we have awarded the prize of two guineas. This is a very fair piece of draughtsmanship and shows clearly the details of the design. From the remainder we have chosen eight for reproduction, each of which has some claim for merit. To three of these we have awarded a copy of "Specification No. 6," namely:—

Mr. Septimus Warwick, of North Kensington, for his sketch of No. 63, Sloane Street, W. (p. 205);

Mr. Harold W. Markwick, of Stonehouse, for his very conscientious drawing of the Prudential Assurance Building at Plymouth (p. 204); and

"E. T. I.," of London, S.W., for his drawing of a house at Chelsea by the late J. F. Bentley (p. 204).

It is always difficult to foresee what may be the interpretation of one's words by various people, and so it happens that we have drawings before us which range from two or three small windows to the whole angle of a building stretching up 100ft. We had hardly such visions as the latter, rather expecting the "detail" to be limited to a less extensive treatment; though, doubtless, in a wide sense, they may both be classed under the word "detail."

The drawings now reproduced show that their authors have gained some control over the pen and are able to use it with skill: but we rather commend more those that have evidently been made from the actual building than those which suggest that a photograph or another drawing has provided a handy guide. We are sure, however, that all the competitors will have derived benefit from the exact observance of the buildings they have chosen for their purpose.

The wash drawings submitted—a brave total of four!—are far inferior to the majority of the line drawings; indeed, we do not feel justified in awarding the prize to any one of them: the only drawing that has any merit is by Mr. J. Gillespie, of 6, Bruntsfield Gardens, Edinburgh, of an entrance door to University College, Oxford, not a very admirable design by Mr. Bodley. The drawing has considerable boldness in the shadows, and though we do not consider it of sufficient merit to receive the prize of two guineas offered, we are sending Mr. Gillespie a copy of "Specification No. 6," in the hope that he will perhaps find it of some use.

# THE ARCHITECTURAL ASSOCIATION.

## MODERN CHURCH DESIGN.

### By C. A. NICHOLSON.

A MEETING of the Architectural Association was held last Friday evening at No. 9, Conduit Street, W., Mr. Henry T. Hare, president, in the chair. The following were elected members of the Association:—Messrs. Herbert Dennis, C. W. Reeves, E. J. Kelly, S. Greig, H. A. Bower, A. J. L. Leman, E. E. Beaumont, A. C. Caudwell, F. W. Commin, D. G Round, F. G. W. Dudley, H. G. Burgess, E. D. Brown, F. R. Foster and H. Morley.

Messrs. Harold A. Woodington, A.R.I.B.A., W. G. Huxley, Arthur C. Lee, H. P. Burke Downing, F.R.I.B.A., and John P. Seddon, F.R.I.B.A., were reinstated

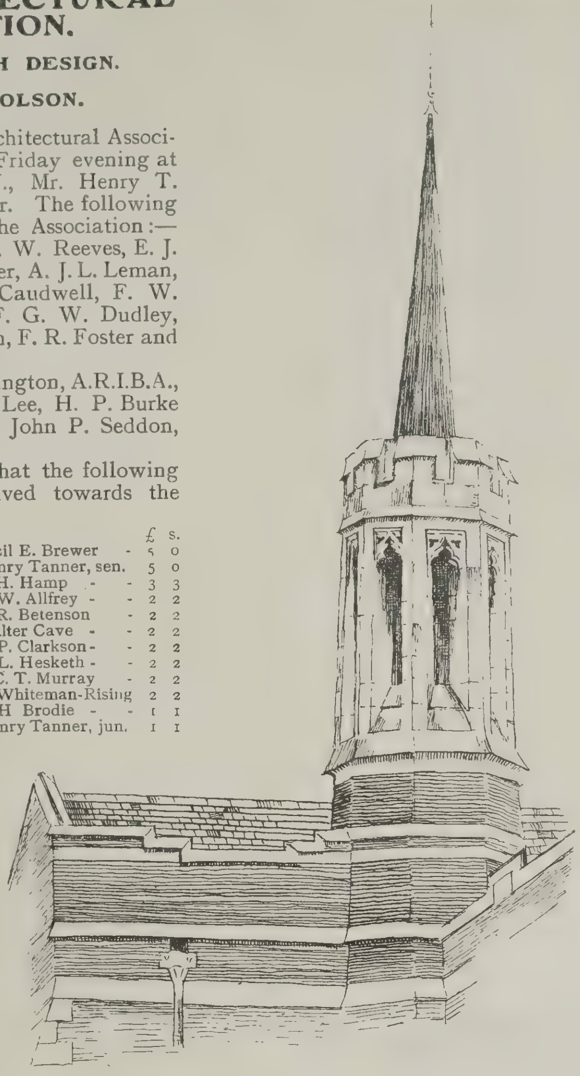
It was then announced that the following donations had been received towards the new premises fund:—

| | £ | s. | | £ | s. |
|---|---|---|---|---|---|
| T. E. Collcutt - - | 25 | 0 | Cecil E. Brewer - | 5 | 0 |
| A. H. Tiltman - | 25 | 0 | Henry Tanner, sen. | 5 | 0 |
| Proprietors of "The Building News" | 10 | 10 | S. H. Hamp - - | 3 | 3 |
| Leonard J. Williams | 10 | 10 | E. W. Allfrey - - | 2 | 2 |
| Keith D. Young - | 10 | 0 | F. R. Betenson - | 2 | 2 |
| H. O. Cresswell - | 5 | 5 | Walter Cave - - | 2 | 2 |
| F. M. Elgood - - | 5 | 5 | T. P. Clarkson - - | 2 | 2 |
| F. W. Lane - - | 5 | 5 | R. L. Hesketh - - | 2 | 2 |
| A. C. Martin - - | 5 | 5 | J. C. T. Murray - | 2 | 2 |
| J. W. Penfold - - | 5 | 5 | H. Whiteman-Rising | 2 | 2 |
| J. A. Reeve - - | 5 | 5 | C. H Brodie - - | 1 | 1 |
| Hugh Stannus - - | 5 | 5 | Henry Tanner, jun. | 1 | 1 |

In addition to the foregoing list, a number of members have, in accordance with the committee's suggestion, doubled their donations.

On the motion of Mr. Francis Hooper, seconded by Mr. Needham Wilson, the committee's report and balance sheet for the session 1902–3 was adopted.

A paper on "Modern Church Design" by Mr. C. A. Nicholson was then read by Mr. F. C. Eden, of which the following is a summary:—



TURRET, NORTH SIDE OF NAVE, ST. CLARE'S CHURCH, SEFTON PARK, LIVERPOOL. LEONARD STOKES, ARCHITECT. DRAWN BY E. EARNSHAW.

Modern church design may be said to have been evolved during the century which has just ended. Owing to a variety of causes, church building was at a standstill in England between the death of Queen Anne and the end of the eighteenth century. It is conceded, even by those who disagree with Thackeray's opinion of the Georges, that the influence of the Hanoverian Court was not such as to foster an enthusiastic churchmanship. Moreover, during the greater part of the eighteenth century the nation was engaged in a life and death struggle with the French monarchy, the American colonists, and afterwards with Napoleon. The population was almost stationary; the old churches sufficed for all requirements; if they fell into disrepair they were patched up. In London, and some other large towns, a few new churches were built; generally these were proprietary chapels, financed by the ground landlords and supported by means of pew rents.

The Church of England was roused to activity by the preaching of the Wesleys and the influence of the Tractarians, and since the final overthrow of Napoleon the prosperity of the nation has steadily increased. The growth of cosmopolitanism has led to the toleration of all forms of religion, and, consequently, an immense amount of building has been undertaken by the Church and other religious bodies during the past century.

The closing years of the eighteenth century, the period which may be taken as the starting point of modern church history, was the age of the Greek revival in architecture. The style of the Adam Brothers was the vernacular architecture of the day. But, meanwhile, other influences were making way among a large class of people. In the first quarter of the eighteenth century the "Gentleman's Magazine" was established. This publication soon became the recognized chronicle of matters of antiquarian interest. and its influence was distinctly in favour of a revival of Gothic architecture.

The early Gothic revivalists, however, were not numerous nor influential, the style which most commended itself to the critics of the Regency and the reign of George the Fourth being that of literal classical revival.

The Tractarian movement, the writings of Pugin, and the rebuilding of the Palace of Westminster, combined in the encouragement of the Gothic revival in the second quarter of the nineteenth century. Gothic architecture ceased to be looked upon with suspicion, or regarded as a badge of Popery. The modern type of church arrangement was thus gradually evolved during the reign of Queen Victoria, and, with very few exceptions, existing buildings were altered in such a way as to make them conform to the prevailing fashion.

A prominent early Victorian architect was Edward Blore. There exist several churches from his hand, as a rule built of white brick, with cement or Bath-stone dressings. The style, fortunately, found few admirers, and the fashionable church architects of the middle of the last century settled down to a style imitated from English Decorated work, using Early English (which was supposed to bear being starved, for cheap jobs).

Considerable improvements were at this period introduced in the liturgical arrangements of churches—galleries and pews were generally abolished, chancels were formed, and more space was provided about the altars.

The cheapness of churches built in the fifties may be partly accounted for by the growth of railways, and partly by the fact that church designs were then generally based upon rural and parochial models. The choice of this type minimized constructive difficulties, and made it possible to cover a considerable space in a very economical fashion. As a result, the churches of this age are seldom of a really imposing or dignified character.

Pugin set the fashion of spires and open-timber roofs, neither of which features can be made effective in a cheap church. Pugin's own works invariably possess distinction and character, notably his churches at Birmingham and Cheadle, the convent at Alton, the churches at Rugby and Ramsgate, and his work at the Houses of Parliament. The style which Pugin could handle impressively was less successful when imitated by his contemporaries. It is needless to quote examples to illustrate this dismal, though perhaps inevitable, chapter in the annals of modern ecclesiology. It must not, however, be forgotten that some good work was done at this time. Scott's church at Camberwell, for instance, with its fine central steeple and its long chancel, is solidly built and of good outline, though internally the effect is spoiled by the galleries. A very fine Roman Catholic

BUSINESS PREMISES, NO. 45, QUEEN STREET, OXFORD. HENRY T. HARE, ARCHITECT. DRAWN BY C. T. ARMSTRONG.

LIVERPOOL TECHNICAL SCHOOL. DRAWN BY PHILIP DAWSON.

church in Stepney was built about this time from the designs of one Wardell; and away in Australia, the cathedral, the university buildings, and numerous churches in the city of Sydney were being carried out under the care of Blackett in a bold and vigorous Perpendicular manner, somewhat reminiscent of the work of Wykeham.

Meanwhile the Ecclesiological Society, the moving spirit of which was Beresford Hope, was steadily influencing the architects of the day. Beginning by assisting upon a literal reproduction of old forms as a necessary preparatory process, the ideal of these enthusiasts was to bring about the development of a new and living vernacular architecture based upon Gothic models. Since the Ecclesiological Society and its individual members possessed considerable influence in the selection of architects to carry out church work, their opinions naturally carried great weight. Scott, and Brandon the architect of the Irvingite Church in St. Pancras, were to a certain degree in sympathy with the views of this Society, but less so than Carpenter, Butterfield and Street. Carpenter's opportunities were few, but his fine church in Munster Square is sufficient evidence of his ability, and an unexecuted design of his for a cathedral at Colombo is quite remarkable as an original attempt to adapt Gothic to a hot climate. Slater, who had been partner with Carpenter, Ferrey, Withers, Dawkes, Buckler, Brandon, Teulon and Christian were all popular church builders in the fifties and sixties. But the work of Butterfield and Street was far ahead of that of their contemporaries, and its superiority quite justifies the patronage they received from the Ecclesiological Society.

Whatever may be thought of some of the details of Butterfield's work, there can be nothing but admiration felt for his strict insistence upon principles, and for the thoroughness with which he worked. When he built All Saints, Margaret Street, he laid down certain rules of his own, and from those rules he never deviated at any period of his long career. Butterfield had few followers, but the work of George Edmund Street had a very strong influence upon his contemporaries. Like Butterfield, Street remained faithful to Gothic motives, though in the middle of his career he was very much influenced by the beauties of French and Italian models. His constructive ability was hardly equal to that of Butterfield, but, like him, he insisted upon sound building and upon adherence to a standard of liturgical arrangement in all his works.

Sir Gilbert Scott, in his career of forty years' duration, did as much as any architect to influence the taste of the nation. Working at first in correct English Decorated style, his later buildings are often somewhat French in character, though he never went to the same length as Street or Burges in these matters.

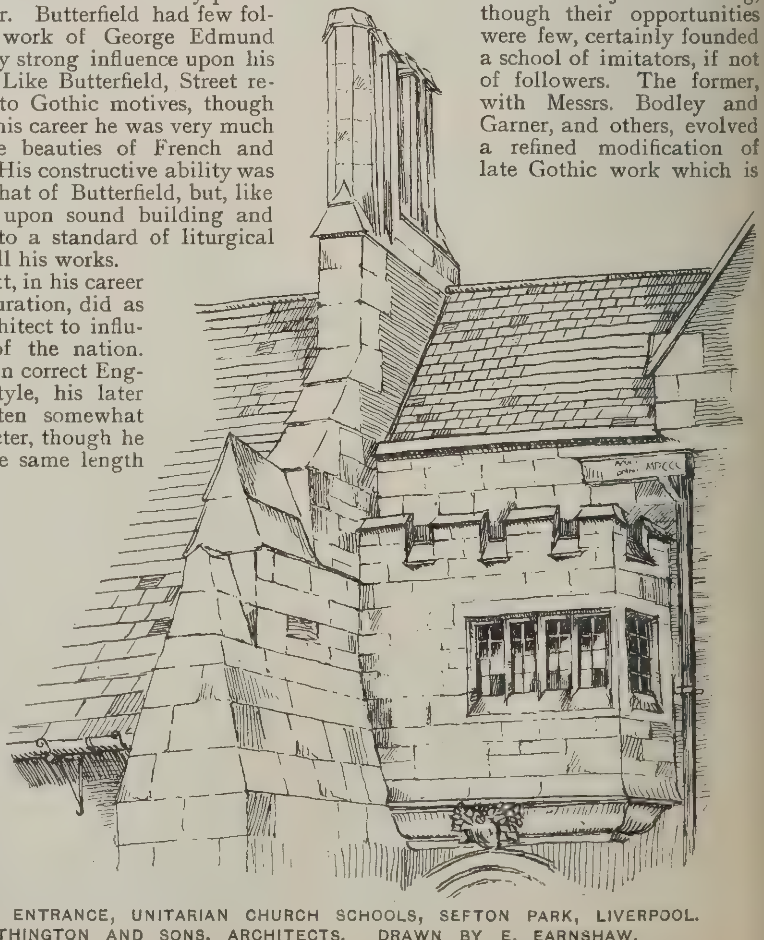
Burges did not carry out very much important church work besides Cork Cathedral and the excellent restorations at Waltham Abbey. His church of St. Faith, at Stoke Newington, is, however, interesting as being arranged upon distinctly modern lines. It consists of a wide nave with an apse and a coved ceiling and broad lancet windows, below which runs an arcaded passage aisle, the general disposition recalling the Bishop's Chapel at Rheims, and the detail being French in character. Burges's fine church at Limehouse, with its simple saddleback tower, is less well known.

The churches built by James Brooks in North London are designed in an early and severe manner, solidly built, and of fine proportion. Two of these, St. Chad's and St. Columba's, at Haggerston, are cruciform buildings, the latter with a low tower over its chancel, and are distinctly impressive, although, like much of this architect's work, rather cold and uninteresting in detail.

The late John L. Pearson's large town churches are a class by themselves. Beginning with the pretty but rather tame building in Bessborough Gardens, in correct middle-pointed style, he was next employed at St. Peter's, Vauxhall, an apsidal brick church of French character, vaulted throughout. He afterwards settled down into a distinct manner of his own, which is exemplified at Kilburn and Red Lion Square, at Croydon, Norwood, Liverpool and Bournemouth, and which culminated in the cathedral at Truro. These churches are all vaulted throughout, and designed with great constructive skill, the area of the supports being reduced to the least possible limits. Their plans are often ingeniously arranged to fit an irregular site, their detail is severe and of strictly English origin, but they vary considerably in general design.

A contemporary of these was the late Sir Arthur Blomfield, some of whose earlier churches deserve attention on account of their frank modernity, iron-columns and galleries being freely introduced.

Little important church work was done at the end of the nineteenth century, and most of it was entrusted either to the architects just mentioned or to living artists of unquestioned ability. The younger Gilbert Scott and John Sedding, though their opportunities were few, certainly founded a school of imitators, if not of followers. The former, with Messrs. Bodley and Garner, and others, evolved a refined modification of late Gothic work which is



ORIEL OVER ENTRANCE, UNITARIAN CHURCH SCHOOLS, SEFTON PARK, LIVERPOOL.
T. WORTHINGTON AND SONS, ARCHITECTS. DRAWN BY E. EARNSHAW.

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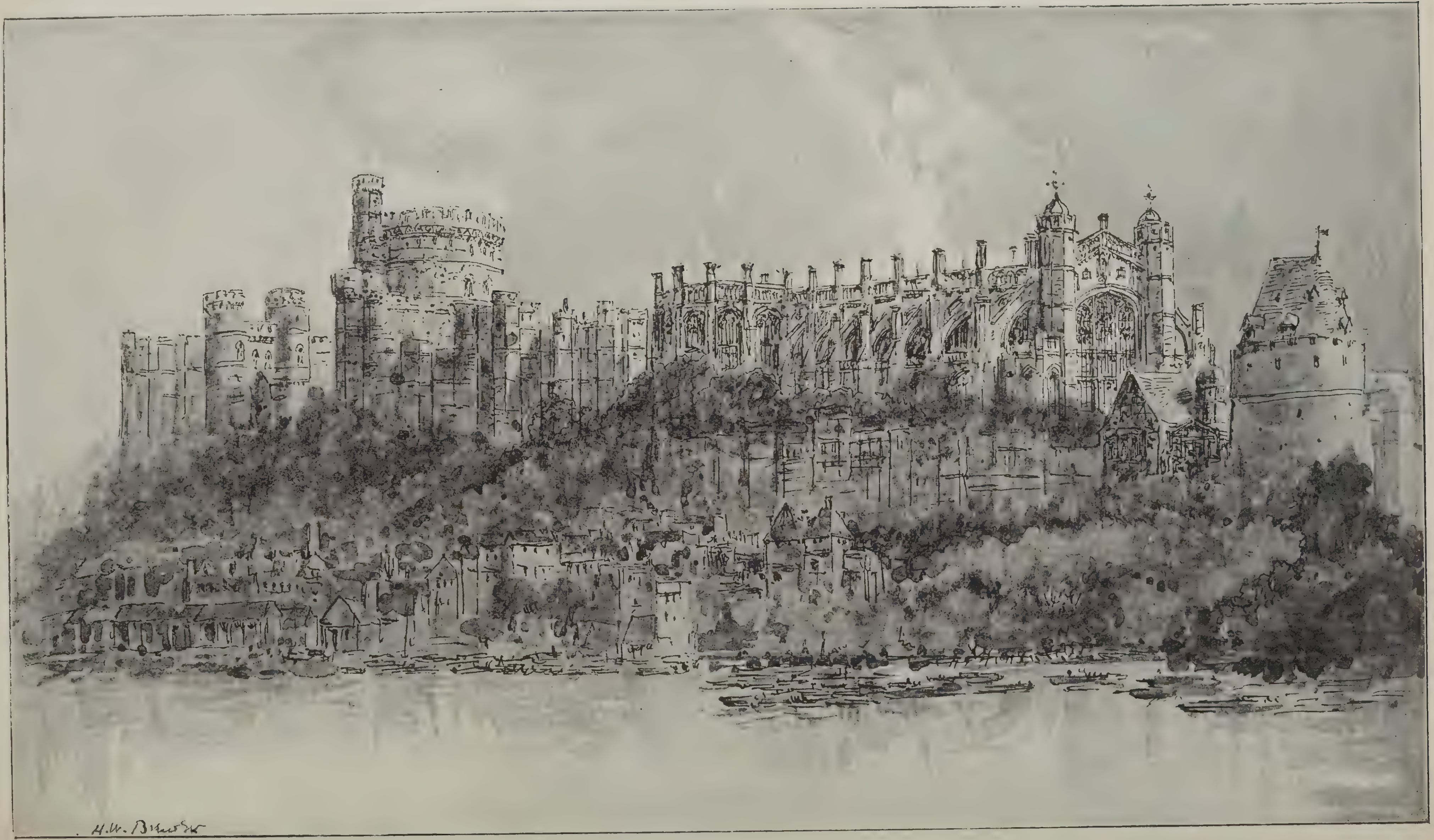
*Supplement to*
THE BUILDERS' JOURNAL AND ARCHITECTURAL RECORD,
*Wednesday, November 11th*, 1903.



WINDSOR CASTLE.

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*Supplement to*
The Builders' Journal and Architectural Record,
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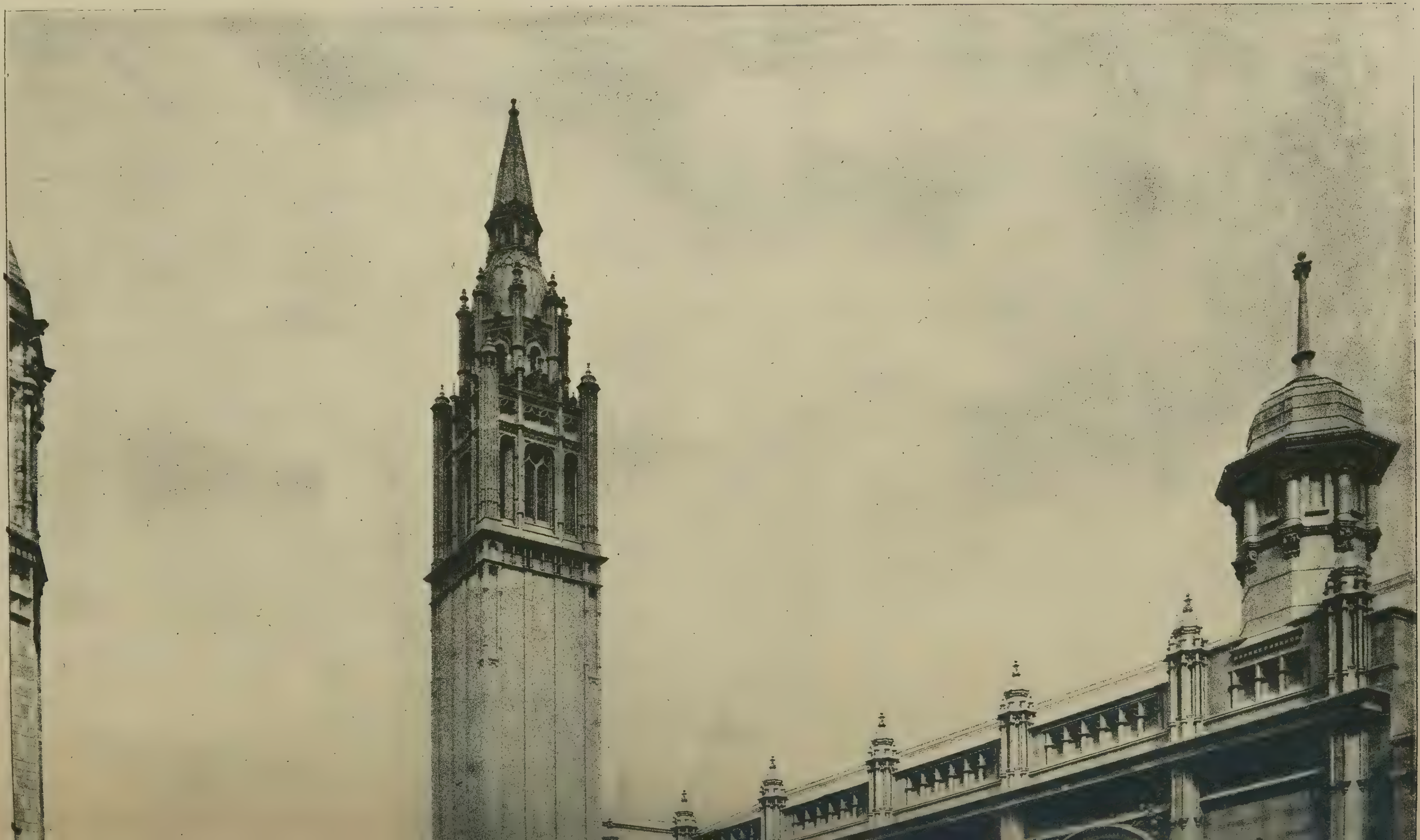

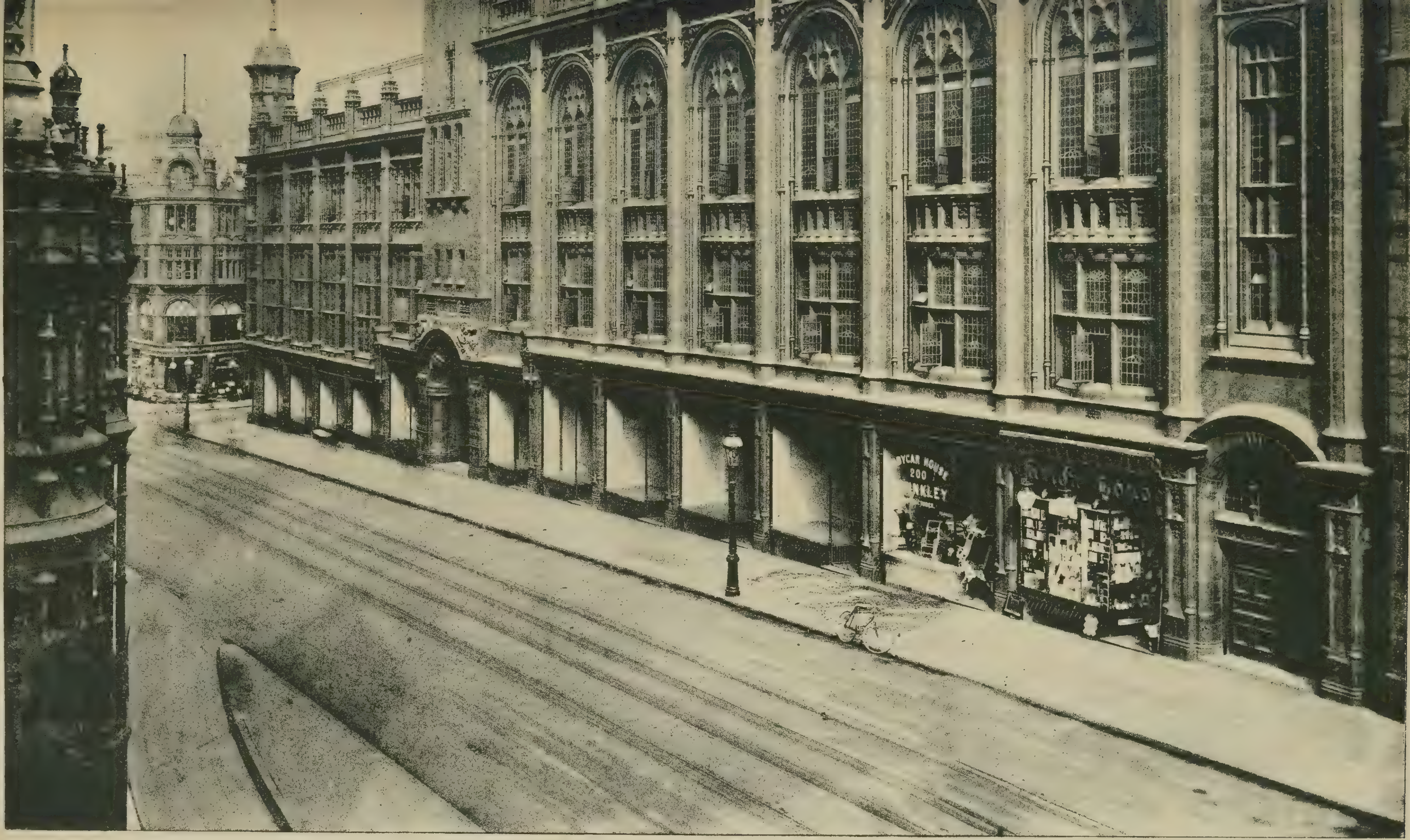

PHOTOGRAPH BY T. LEWIS

"INK-PHOTO." R. J. EVERETT & SONS, 56 LUDGATE HILL, LONDON, E.C.

CENTRAL WESLEYAN HALL, CORPORATION STREET, BIRMINGHAM. EWEN HARPER & BROTHER, ARCHITECTS.

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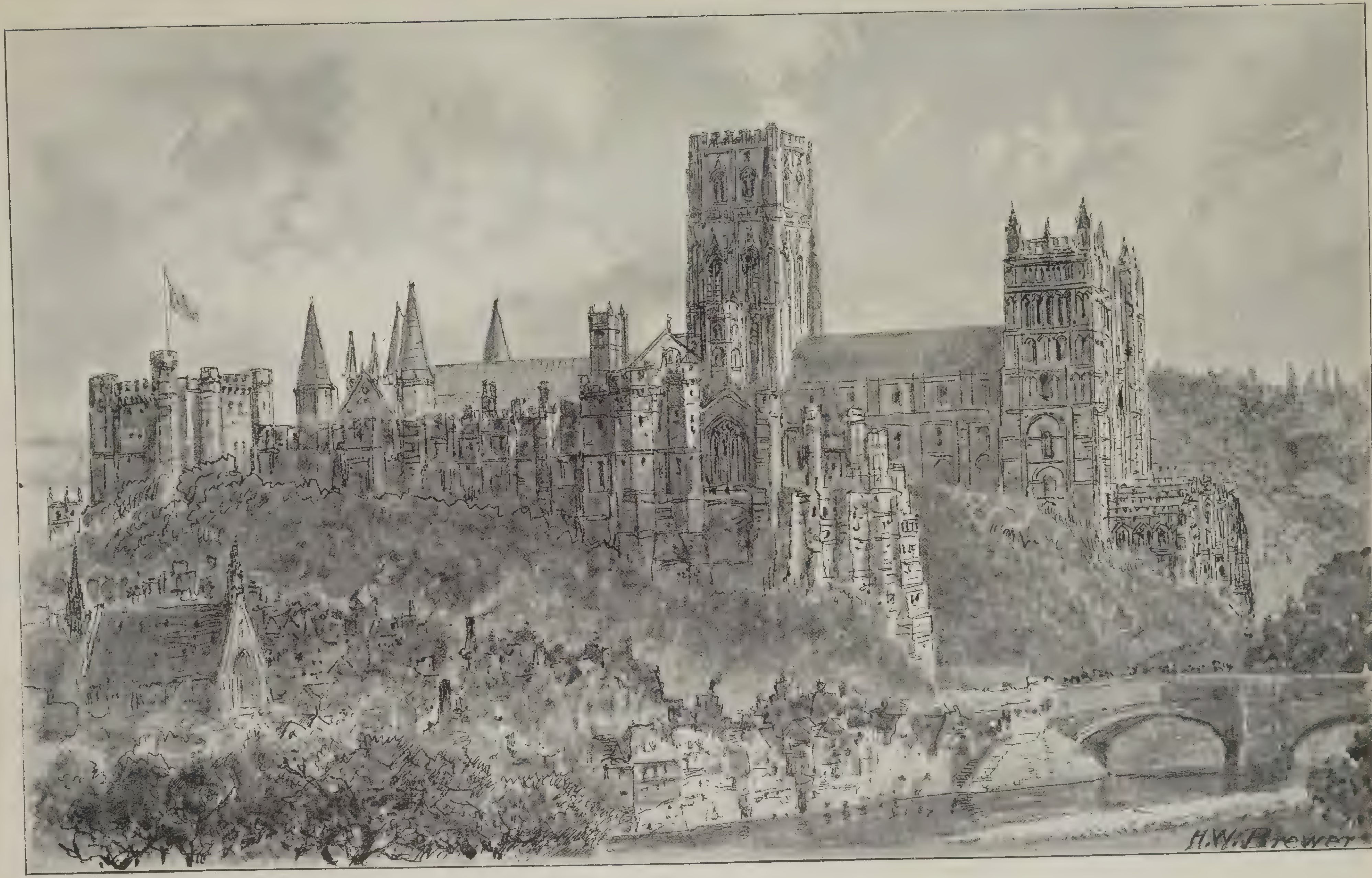

Durham Cathedral.
Drawings of Architecture: by the late H. W. Brewer.

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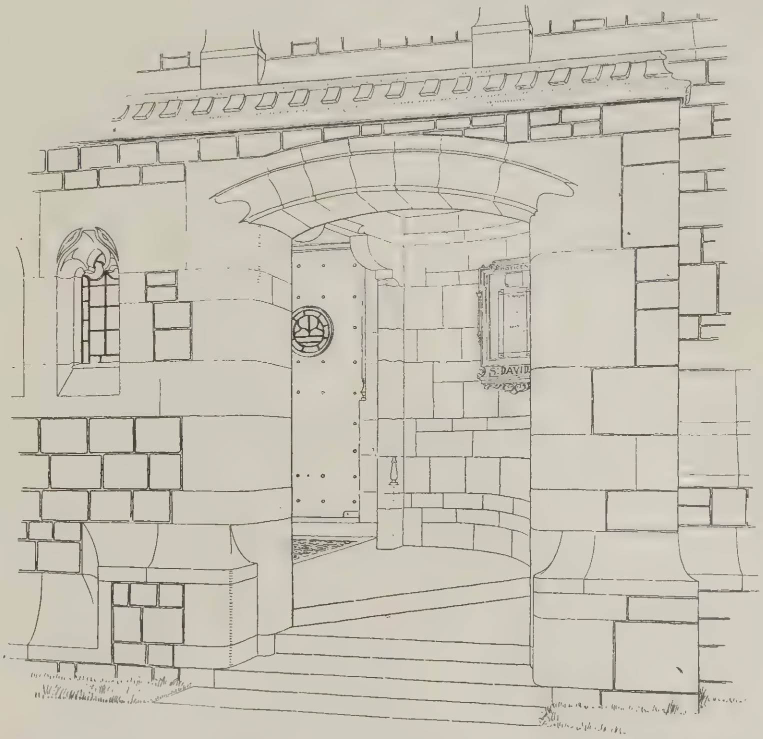
seen at its best in large town churches. Sedding, with an intimate knowledge of old work, was, nevertheless, frankly modern in his ideals. Each of his buildings marks a fresh phase of his versatile powers.

The earliest and most complete of his churches, that at Bournemouth, has a nave and chancel with very slender arches opening into a north aisle, a stone rood screen and reredos, and a western tower, the detail being late Decorated, and all the accessories of the church very complete. Cardiff, Hayle, Falmouth and Highgate are great, simple, hall-like churches, with narrow aisles and no chancel arches, their detail based upon early models; and their interiors invariably characterized by a remarkable sense of spaciousness. At Truro, Sedding followed the old Cornish type. At Clerkenwell the work is Renaissance, steel stanchions and girders being enclosed in concrete columns and entablatures. Holy Trinity, Chelsea, is a wide, hall-like church, with widely-spaced and massive piers, and, as is well-known, it was intended to give eminent painters and sculptors a free hand in its internal decoration under the general guidance of the architect. The last church which Sedding designed was built after his death at Ealing by his successor, Mr. H. Wilson. Here the supports are unusually far apart, and the piers carry wide and low segmental arches. There is no clearstory, but galleries are formed over the flat ceilings of the aisles, with three triforium arches in each bay of the nave. The nave is lighted by a huge west window with traceried buttresses, suggested, perhaps, by those at Gloucester. Sedding, like Pugin, was a most versatile designer. His woodwork is unrivalled in fancy and refinement; his embroidery, glasswork, and metal work are full of interest, and always designed in strict accordance with the nature of the material used.

To some extent Bentley's work resembled that of Sedding, though it was founded more strictly upon precedent. In his last and most important church he was compelled to follow archaic and foreign models, and he attained a result which bids fair to be honoured with the sincerest form of flattery.

During recent years many good, bad and indifferent churches have been built, many styles have been imitated, and many mannerisms developed only to be forgotten. One is therefore led to the conclusion that architectural style is no longer a question of mouldings and traceries in these days of cosmopolitanism and railways. A building may be unmistakably modern whatever may be the shape of its windows or its pillars, the disposition of its parts, or the materials of which it is constructed. Hence there is little advantage in discussing questions of style, which, after all, must be left to the discretion of the individual designer. Unintelligent plagiarism of eccentricities should, however, be deprecated. As regards ornament, it goes without saying that it should not be used unless it is the best of its kind.

Architecturally the great invention of recent years is the cheap church. The cheap church of fifty years ago was ornate, but shoddily built. Twenty years ago economy was effected by building substantial and fairly complex churches of the cheapest and ugliest materials, red and yellow brick, fitting them up with varnished deal furniture, and stunting their general proportions. Where funds are limited it seems better to adopt an economical plan from the outset, discarding chancel arches and complexities of roofing, and spending the available funds upon sound building, and some degree of finish in the details. Economy may be effected by avoiding undue multiplication of parts, and by disposing the section of the church in such fashion as to secure an agreeable proportion in each of its alleys without undue expenditure of material.



SOUTH DOOR, ST. DAVID'S CHURCH, EXETER. W. D. CAROE, ARCHITECT.
DRAWN BY NORMAN K. JACKSON.

The unit by which the eye measures the size of a church is the width of the nave bays. If these are unduly wide, and the scale is not restored by some device such as a subdivision of the bays, the church looks shorter than it really is. We must all have noticed how the adoption of sexpartite vaulting shortens an interior. On the other hand, if the features are too small, the church will look toy-like. The best dimensions seem to vary between 15ft. and 25ft., according to the size of the church. An agreeable proportion between height and width can generally be secured, whatever the size of the church, by the adjustment of the relative widths of nave and aisles. Thus, if a church be 60ft. across and its nave 30ft. wide, the wall-plates must be, let us say, 40ft. from the floor in order to secure agreeable proportions. If, however, the nave be reduced to 21ft. in width and the aisles proportionately increased, the wall-plates need only be 28ft. from the floor in order to obtain the same proportion as before. Unless ample funds are available it seems a mistake to attempt a clearstory, because a one-storey building looks much higher in proportion than one in which the height is subdivided into pier arch and clearstory. It is generally possible to obtain a sufficiently tall arcade to give dignity to the interior of a one-storeyed church, and if the aisle roofs are flat or span ones like the old West-country churches, a dignified range of windows can be contrived in the aisle walls. Where clearstories are attempted in small churches, it is desirable that there should be a considerable difference in scale between aisle and clearstory. Thus the clearstory may be subordinated to the aisle, as was commonly done in fifteenth-century parish churches, or, on the other hand, the clearstory may dominate the design, like that at Malvern Abbey. The cheapest known form of church is that in which a single large slant roof covers both the nave and the aisles. If this plan must be adopted for the sake of economy, it is still possible to secure good scale in the central alley by using bold arcades and large end windows. In these cases the aisles must, of course, be sacrificed, and their windows must be small, perhaps square-headed. Good hints for the treatment of such churches may be gathered from the village churches in the timber districts of England, and from some French work. The detail of such buildings should, of course, be simple; and the extent to which simplicity may be carried without sacrifice of dignity may best be learned from a study of old work.

Although, as has been indicated, it is possible, and often legitimate, to exercise parsimony in adjusting the proportion of the cross-section of a church, it must not be forgotten that actual height is a thing in itself most desirable. Although lack of height can be neutralized by skilful disposition of the resources at the architect's disposal, it is a very false economy to attempt to save money by crowding the floor space of a church. The planning of altar, font, seats and so forth are determined by the average sizes of the human body, and the requirements of the Incorporated Church Building Society may be taken as defining an irreducible minimum in these respects. A sanctuary should be roomy, not less than one, or, in large churches, two bays in length. Unless there is ample space steps should not be multiplied, narrow and crowded steps being both dangerous and undignified, especially at the altar. Altar rails should be placed upon a single step, and the approaches and return gangways broad and direct. The wider pews can be spaced the better. If the site is cramped it is better to introduce galleries than to crowd the floor-space. Pews seem preferable to fixed rows of chairs, which are ugly and rickety, but there seems no good reason why a part of the church should not be pewed, and the rest of the floor left open and used only for movable chairs, as is often the case abroad.

Roomy vestibules, screened off from the body of a church and fitted with swing doors, greatly add to its convenience and comfort, and may be advantageously introduced, even though they may necessitate the building of western galleries. Vestries and accessory buildings are too generally cramped in modern churches, but a detailed discussion of these matters is unnecessary, since they have been dealt with in a thoroughly practical and sensible fashion in Mr. Micklethwaite's excellent little book upon modern parish churches.

The common custom of placing the choir in the chancel generally works fairly well, and it seems a pity to abandon it for the mere sake of novelty. But in some very large and long churches, and in cases where there is a low and narrow chancel arch, the singers are best placed in the nave or in galleries facing each other, like those at Milan and St. Anastasia, Verona, and Exeter Cathedral. These minstrel galleries may be used with a west end organ. The best arrangement must, however, be determined by so many circumstances that it is not possible to lay down a general rule for the placing of the organ and choir.

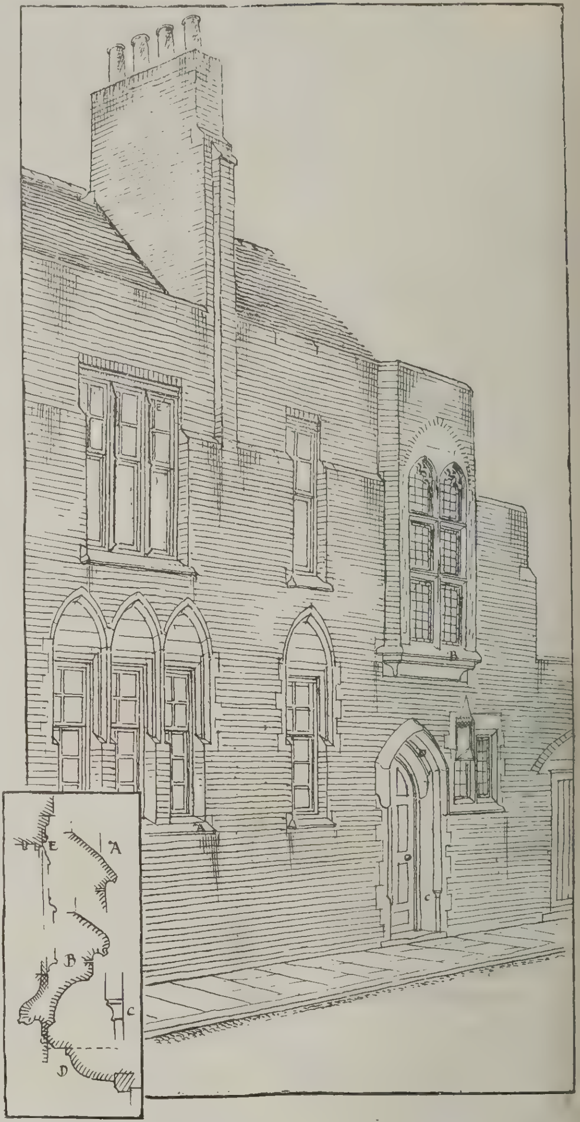
Chapels are convenient, indeed almost necessary, adjuncts to parish churches of any size. A chapel should be conveniently placed with regard to the entrance doors of the church, or it should have an entrance of its own, and its heating and lighting arrangements should, if possible, be self-contained. Only two steps are necessary at a side altar, the footpace and the communion step, as side altars are only used for plain celebrations.

The traditional position of an English church tower is upon the main axis of the church, either at the west end or upon the crossing. But there may often be circumstances that suggest some other position as best for the tower, such as the side of the nave or the chancel; and in such cases it is often possible to obtain fine internal effects by a judicious contrast of the massive supports of the tower with the lighter piers and arches of the rest of the church, as is done in the fifteenth-century church of St. Mary Steps, at Exeter. The internal treatment of the tower is one of the great chances open to the church architect, and this feature has been handled in a remarkably masterly way by Butterfield at St. Alban's, Holborn, at Stoke Newington and at Rugby.

Should it fall to our lot to design cathedrals or large collegiate churches, we should, I think, unless we have very good reasons to the contrary, place the towers and dispose the main lines of the building in a regular and monumental fashion, and it is very doubtful whether a happier grouping can be desired than the traditional English combination of a large central lantern with smaller belfries at the west end. The requisites of a modern cathedral are a nave sufficiently spacious for a large congregation, and a choir roomy enough for the cathedral staff and the senior clergy of the diocese. The cathedral must contain the official chair of the bishop, and it should dominate a group of diocesan buildings such as the chapter-house, the congress hall, the diocesan offices, the music schools and so forth. Many mediæval cathedrals and abbeys have been more or less successfully adapted for modern use, but it will be admitted that a new cathedral should not follow old monastic models in too literal a fashion. The cathedral builders of the future should surely make the fullest use of modern constructive facilities and engineering skill in order to enclose great unbroken floor-spaces with structures that shall be stable, fireproof, durable and rust-proof.

ANGLE TREATMENT AT INTERSECTION OF THREE STREETS. PRUDENTIAL ASSURANCE BUILDINGS, PLYMOUTH

DRAWN BY HAROLD W. MARKWICK.



HOUSE AT CHELSEA. THE LATE J. F. BENTLEY, ARCHITECT. DRAWN BY E. T. I.

Mr. E. P. Warren, in opening the discussion, said the chancel arch was often put into modern churches without any constructive reason as occurred in old churches. He agreed with Mr Nicholson in deprecating the chancel arch both from economic reasons and because without it the appearance of length in a small church was increased. It was a surprising fact that if a church were cubed out it would be found that the air-space cost more than the walls per cubic foot, and thus a church was relatively cheaper in itself as it contained a greater void. He thought if brick had to be used for building a church it were wise to go in for it entirely and not use the common stone dressings which produced a patchy effect, and to depend for effect on mass, proportion and strength. He saw no objection when cheapness was essential to the use of plaster if it were treated frankly. Buttresses should never be merely placed for effect as in many modern architects' work, but only where thrusts were, and the same principle of truthfulness applied throughout. In the Middle Ages this country was a comparatively poor one, and this accounted for the extreme "pokiness" of our churches—the English parish church was on an extremely small scale as compared with foreign ones. It was a fault that of recent years the clergy asked for churches to be built too tightly to fit a certain sized congregation, and so robbed them of all spaciousness, which was a very fine quality. It was almost impossible to get an inspiring quality without height in a church. He asked consideration of a plan which had been adopted, namely, the church of single span with pierced internal buttresses; in this the aisles were mere passages. He thought two aisles of this description formed the most reasonable plan. He would be inclined never to terminate an aisle against a dead wall; if the aisle were broad and terminated in a chapel it became available for seating, and so would prolong the seating of the chapel. He thought the archæological severity which some architects infused into their work was far preferable in a church to the frivolity of some modern architects in striving for originality.

Mr. Needham Wilson began by stating that the purpose of a church was not merely to house a certain number of persons, but to aid devotion. In old churches there was a sense of awe and mystery, but in modern architecture this was lost. He was not sure that a great East window was wanted; it gave too much light, and was destructive of mystery. He suggested a cloak-room should be provided in town churches—a sitting accommodation of 2ft. 9in. did not allow for comfort with a dripping umbrella, a wet overcoat, and a silk hat.

Mr. G. H. Fellowes-Prynne next spoke, and Mr. Hare, the president, in summing up, thought the problem of designing a church called for different qualities in an architect to any other class of building—he must have essentially a devotional and poetic feeling. With Mr. Nicholson, he did not think style mattered much. Almost every church was too light; he much sympathized with the dark sanctuary.

**Designs for Country Estate Buildings.**—The Editor of the "Country Gentlemen's Estate Book, 1904," is prepared to receive designs for country estate buildings, such as mansions, houses, conservatories, summer-houses, entrance lodges, farm buildings, labourers' cottages, stabling, &c., for reproduction. They should be in black and white, for reduction to occupy a page 7½in. by 4½in., and should be addressed to the Editor, 2, Waterloo Place, Pall Mall, S.W.

# Correspondence.

### "Dinging."

*To the Editor of* The Builders' Journal.

London, S.W.

Sir,—With reference to reply in your last week's issue as to the meaning of "Dinging," there appears to be more than one method to which the term is applied. I have heard the process described as follows:—First method: The bricks are axed over to look like new. Second method (used for new or old walls): The face of the bricks is rubbed over with a piece of coloured brick in order to give a uniform tint. The latter method is generally adopted before "tuck pointing" in order to hide the original mortar.—Yours truly,

ALEC W. PERCIVAL.

### "Scientific Masonry."

*To the Editor of* The Builders' Journal.

London, N.

Sir,—The illustration and description of the ellipse arch in your issue for October 28th is very disappointing, and the writer has evidently very little knowledge of the properties of the ellipse. I would point out that both the intrados and extrados of the illustrated arch are true semi-ellipses (being described by the well-known method of square and trammel). The writer is in error in stating that they are parallel; ellipses cannot be drawn parallel to each other. Furthermore, I would point out that both of the methods described for finding the joints are not good construction, and in no instance shown are they normal to the curvature of the arch. This would be clearly evidenced if the writer had set out an ellipse arch of the dimensions shown (full size for actual work) having a deep face moulding. I am glad to see that you have had the courage to publish these practical articles; there are many mechanics to whom they would prove a boon; but they should be correct and scientific in more than title.—Yours truly,

G. R. BARHAM,
Certified Science and Technical Instructor,
Instructor of Masonry,
Northern Polytechnic.

*To the Editor of* The Builders' Journal.

Sir,—In answer to the above, I must first express my surprise that such remarks should have been written by a person signing himself a certified science and technical instructor and instructor of masonry. However, I must thank him for pointing out what I had no intention of doing, that is, in attempting an impossibility and succeeding in it. He says ellipses cannot be drawn parallel to each other. My reply to that is, I have done it. Is not the drawing sufficiently clear and the text explicit enough for this instructor?—if not, I pity his students in solid geometry. Then he says with regard to the joints that in no instance shown are they normal to the curvature of the arch. Of course they are not, simply because I do not attempt impossibilities. The curve of the ellipse is one of the conic sections, and is continually changing at each movement of the trammel. How the joints in such a case can be any other than approximately normal, I fail to see. The "deep face moulding" which this instructor is so anxious to see would be merely an ornamentation, and consequently would not affect the principle of construction. I have already stated, in your issue of August 19th, that I do not intend to touch upon elementary principles involved. The text must of necessity be condensed, and the illustration reduced to the minimum number of lines conducive with commonsense.—Yours truly, JOHN WORNELL.

# Bricks and Mortar.

**Aphorism for the Week.**

*The age is ugly—to find anything beautiful we must "look before and after."*

William Morris.

**Our Plates.** The Central Wesleyan Hall, Corporation Street, Birmingham, is mostly built with red terra-cotta. The principal elevation is in Corporation Street and has a frontage of 224ft.; to Ryder Street 134ft., and to Dalton Street 275ft. A distinguishing feature of the building is the campanile, which rises to a height of 180ft. and is used as an extract ventilator. The ground floor and basement are arranged for commercial purposes. In the basement there is provided a commodious room capable of seating several hundreds of persons, which may be used for a ragged school, or similar purposes. Another distinguishing feature of the building is the main entrance under the campanile from Corporation Street, on the sides of which are two bas-reliefs in buff terra-cotta, one representing the historic incident of Wesley's rescue from the fire and the other, Wesley preaching from his father's tombstone. This opens through a vestibule into a spacious entrance hall, from which two grand staircases constructed of Granolithic ascend to the first floor and lead to the Great Hall, which is entered by no fewer than twenty-one doorways and has accommodation for more than 2,000 persons. The hall itself is constructed in the form of an amphitheatre, and has roomy and well-lighted corridors extending round the entire space. It is mostly furnished with tip-up chairs. The inside dimensions of this hall are as follows:—Extreme length 146ft., width 80ft., height 48ft. There is also upon the first floor a Synod Hall with organ-chamber. This is suitably furnished and accommodates about 450 persons. Upon the same floor is a church parlour, library and a complete set of offices for the mission staff. In addition to these, and still upon the first-floor, is the schoolroom, capable of accommodating 400 children. Upon the second floor a gymnasium with lofty semi-circular roof is provided, and also a young men's and young women's club-room, together with a large number of committee- and class-rooms. In addition to the principal entrance before described, there are three other entrances, each with spacious staircases and each constructed with Granolithic, leading to the Great Hall, &c. The entrance from Ryder Street is intended chiefly for the Church House block, but is also arranged for getting to and from the Great Hall. The architects are Messrs. Ewen Harper & Brother, of Ruskin Buildings, Corporation Street, Birmingham.—The two drawings by the late Mr. Brewer are referred to on p. 197 of this issue.

**Sewage Treatment.** At a meeting of the Society of Engineers on November 2nd Mr. George Thudicum, F.I.C., F.C.S., read a paper on "The Bacterial Treatment of Sewage." He pointed out that there was no longer any need to argue as to principle with the biological system of purification, but the best methods of application might still be discussed with advantage. The two main points which were still being argued were (1) the relative merits of the anaërobic or septic, as compared with the aërobic, or coarse-grain contact system; and (2) the various ways of applying the effluent from the preliminary treatment to the finishing filters. He was of opinion that the anaërobic process was more in accordance with the teachings of Nature, and moreover possessed certain specific advantages over its rival, such as the averaging of the sewage flow; the greater ease with which regular periodic working of the filters could be obtained; the absence of trouble from loss of water capacity through deposition of solids; and the easier and cheaper cleansing, if necessary. On the question of the necessity for covering a septic tank he thought it desirable, since it prevented disturbance of the bacterially-active scum, avoided risk of nuisance and enabled use to be made of the gases evolved during the putrefactive process, as was actually done at Exeter. As regarded the question of the best method of applying the primary effluent to the secondary beds, the author hesitated to express an opinion, since excellent results had been obtained by both methods, and the evidence available was not yet sufficient to enable a definite verdict to be arrived at.

## Obituary.

**Mr. Henry Read**, a retired builder of Shepherd's Bush, committed suicide recently at the age of sixty-one years.

**Mr. J. E. Stevenson**, a builder in a large way of business at Derby, committed suicide on Wednesday last by hanging himself in an outhouse at the back of his residence. He was forty-six years of age.

**Mr. Arthur Cayton**, architect and surveyor, of Southend, formerly of Southport, died recently. Mr. Cayton served his time in the borough surveyor's office, Southport, and while with Mr. Crabtree, the late borough surveyor, he assisted in drawing up one of the large maps of the borough. He was afterwards borough surveyor at Southend, but for some considerable time he had been practising on his own account.

**Mr. Silvanus Trevail, J.P., F.R.I.B.A.**, of Truro, was travelling by a G.W.R. express on Saturday last and intended to alight at Bodmin Road to attend the funeral of his uncle at Luxulyan. While the train was running between Lostwithiel and Bodmin Road Mr. Trevail left the compartment in which he was travelling, and passed through the corridor into the lavatory. Shortly afterwards the report of a firearm was heard, and the guard found Mr. Trevail lying dead with a bullet wound in his head and a revolver by his side. Deceased, who was fifty-four years of age, was very well known in Cornwall. He was twice mayor of Truro and ex-president of the Society of Architects. Recently he had suffered from failing health and depression of spirits. Mr. Trevail was a short stout man, essentially Cornish in his burly features—one of the last men in the world whom one would expect to commit suicide.

**Mr. John Bernard Hardman**, of Birmingham, died recently in his sixtieth year. He was the head of the well-known firm of John Hardman & Co., stained-glass manufacturers and ecclesiastical metal-workers, which was founded by his father, a friend of the elder Pugin. Mr. J. B. Hardman, like his father, was a devoted Roman Catholic. He received his education at St. Mary's College, Oscott, at the Oratory, Edgbaston, and at the Catholic University of Dublin. A man of unassuming character, he did a great deal of very useful public work. In 1874 he was invited by the British Commissioners of the International Exhibition at Vienna to act as English juror for exhibits in art-metal work and jewellery, and for these services he received a knighthood of the Order of Franz Josef of Austria. In 1879 to 1895 he gave steady support to the progressive developments to which Birmingham owes so much. In 1901 Mr. Hardman received from the late Pope the Order of St. Gregory the Great for the services he had rendered in the advancement of Christian art.

## Keystones.

**No Road through the Green Park** is contemplated in connection with the Queen Victoria Memorial.

**The Telegraphic Address of the R.I.B.A.** is now "Ribazo, London," and the P.O. telephone No. 434 Mayfair. The new Kalendar has been issued, price 2s. 6d.

**Edinburgh Architectural Association.**—The opening meeting was held last Wednesday, when Mr. A. Hunter Crawford, president, delivered an address on "Haddon Hall."

**The Benedictine Abbey of St. Mary Buckfast**, which is situated in the valley of the Upper Dart, narrowly escaped destruction by fire last week. The stable and other outbuildings contiguous to the church were burnt down.

**Lord Windsor**, First Commissioner of Works, is to be elected an honorary associate of the Royal Institute of British Architects. He has expressed his willingness to lay the Institute's proposal for a Board of Architectural Education before His Majesty's Government. Lord Balcarres is also to be elected an honorary associate.

**British School at Rome.**—At the recent annual general meeting it was stated that Mr. Rushforth had resigned the directorship of the school, owing to ill-health, and that Mr. H. Stuart Jones, Fellow and Tutor of Trinity College, Oxford, had been appointed in his place, whilst Mr. Thomas Ashby, a student of the school, who had for some time discharged the directorial duties, had been appointed assistant director.

**The King Edward VII. Sanatorium** will stand on a wooded eminence, 495ft. above Ordnance datum, about four miles north of Midhurst. It will be sheltered from the north and east by a gradual rise of the ground to 630ft., and by beautiful pinewoods, which will be laid out in walks. To the west is an open common. The part of the sanatorium to be occupied by the patients will be a long two-storey building. Each patient will have a separate room, with balcony. In the grounds there will be Liegehallen and shelters. The total number of beds will be 100, including accommodation for twelve well-to-do patients. As already stated, Mr. H. Percy Adams, F.R.I.B.A., is the architect.

**Proposed Isolation Hospital at Burslem.**—A Local Government Board enquiry was recently held into the application of the Burslem Town Council for sanction to borrow £13,000 for the provision of an infectious diseases hospital. The design of Mr. Reginald T. Longden, of Burslem, was accepted in open competition about eighteen months ago. The scheme includes twelve-bed pavilions each for scarlet fever and typhoid fever, and a similar pavilion with a one-bed separation ward for diphtheria; isolation block with one two-bed and one one-bed ward, porter's lodge, administration block for matron, eight nurses and eight servants; steam laundry, disinfecting rooms and mortuary. The area of the site is about four acres.

**Limehouse Church Institute.**—The foundation-stone of this institute (of which Mr. W. Henry White, F.R.I.B.A., is the architect) was laid last Saturday by Princess Christian.

**A Tablet to the Memory of Mr. J. T. Nettleship**, in repoussé bronze on a marble slab (executed by Mr. Frampton, R.A.), was unveiled at Kettering Parish Church last week by Mr. Alfred East, A.R.A.

**A Marble Replica of "La Danaide,"** one of Rodin's finest works (the original in the Musée du Luxembourg), is now on exhibition at South Kensington, where it will remain for a year.

**Last Week's Birthday Honours** included the Imperial Service Order for Mr. David Ewart, Chief Architect of the Department of Public Works, Canada; and for Mr. W. C. B. Hall, Assistant Director of Contracts, Admiralty.

**District and Building Surveyors.**—Mr. W. G. Green, Mr. E. W. Lees, Mr. A. G. Morrice and Mr. A. P. Stokes (all of London and neighbourhood) passed the recent R.I.B.A. examination for the office of district surveyor under the L.B.A.; and Mr. W. D. Jenkins, of Birmingham, the building surveyors' examination.

**New Gaiety Theatre.**—Messrs. E. J. Prest & Co., of 47, Haverstock Hill, N.W., ask us to state that the contract for the covered shelter to the main entrance was placed entirely in their hands by the architects, and erected by them in conjunction with Mr. J. E. C. Carr and Messrs. Keeling, Teale & Co.

**The "Dessins Tournaire"** belonging to the Académie des Beaux-Arts will, through the courtesy of the French Government, be on view next Monday evening at 9, Conduit Street, W., when M. Homolle (who is coming specially from Athens to London) will read his paper before the Institute on the Treasury of Cnidus and the Monuments of the Ionian Art at Delphi.

**In the Rebuilding of "Bart's"** provision is to be made for (*a*) additional operating theatres; (*b*) new casualty and out-patient departments; (*c*) new nurses' home; (*d*) new quarters for the resident medical and surgical staff; (*e*) an isolation block and other new ward blocks to supply the place of those to be demolished; (*f*) new mortuary post-mortem rooms and pathological department; (*g*) internal structural rearrangement of the east, west and south wings of the hospital.

**Royal Institute of the Architects of Ireland.**—At the general meeting held on Thursday last Mr. R. Caulfield Orpen was elected honorary secretary and Mr. Charles Ashworth honorary treasurer of the Institute for the ensuing three years. A resolution was passed expressing hearty appreciation of the indefatigable energy and tactful skill which Mr. Kaye Parry had displayed in carrying out the duties of honorary secretary to the Institute during his term of office. A vote of thanks was also passed to the outgoing honorary treasurer, Mr. C. A. Owen.

**The new Church of Holy Trinity, Kensington**, being erected in Consort Road, Kensington Gore, from designs by Mr. G. F. Bodley, R.A., was consecrated last week. It is in fourteenth-century Gothic style. It is built of stone, and is intended to accommodate about 800 people. Eventually the fabric will comprise a wide nave, with double aisles on one side, a chancel screened off by an open oak screen, and spacious vestries. But at present only the nave and chancel and one aisle are built. The total breadth of the nave and aisles when completed will be 76ft. The roof is continuous, without any chancel arch. The work has been carried out by Messrs. Stephens & Bastow, of Bristol.

# Electrical Notes.

### The N.E.C.A.

In home electrical affairs the event of last week was undoubtedly the meeting of the National Electrical Contractors' Association. This "combination" of electrical contractors was originally formed with the avowed object of abolishing discounts and commissions given by the wholesale suppliers to consulting engineers, architects, surveyors and consumers. At first they were content to feel their way, but having lately acquired strength through union the policy of the N.E.C.A. has been officially formulated in two ways. Firstly, an agreement has been come to between this association and the Electrical Manufacturers' Association, and by the time these notes are in the hands of readers it is expected that the signatures will have been affixed. Secondly, at the meeting in question the president, Mr. W. R. Rawlings, introduced a proposed model specification for electric wiring and fitting.

### The Agreement.

For reasons given above, and because a hitch is not unknown in such matters, we refrain from publishing the exact terms of the agreement, but it can be stated that contractors belonging to the N.E.C.A. bind themselves to buy only from the members of the N.E.M.A., for which they will obtain a preferential discount—protection *in excelsis*! But this is not all. The pith of the whole agreement is that the manufacturers will not in future give discounts to architects and consulting engineers. It is also said that similar agreements are in course of negotiation with the Cable Makers' and the Plant Makers' Associations. The whole matter is perhaps too delicate a one to comment on freely; it can only be said that these sorts of agreements cut both ways, and one man's misfortune is another's opportunity. In order to succeed, combinations must be complete; so long as they are not, there will always be outsiders who will rush in to get the business that others have refused, and human nature is a factor for which both sides make insufficient allowance. *Qui vivra, verra.*

### The Specification.

This document has been drawn up with a very laudable object, namely, efficiency and simplification. It is a fact that cannot be disputed that the absence of some standard form of wiring specification is detrimental to the trade. Consulting engineers and architects naturally make up their specifications according to tradition and personal experience; some are insufficient in detail, others florid and verbose. It is certain, therefore, that these professional gentlemen would view with pleasure any attempt towards uniformity, as it would save them a vast amount of trouble; to the contractor there would be the knowledge that he was quoting on equal terms with his competitors, and that his assortment of stock need not be so varied as at present. But the N.E.C.A. must not imagine that they can force a one-sided specification, like the one published, down the throats of those who are engaged to act on behalf of the public. This document will serve very well as a basis for negotiation, but in our opinion it would be better that the work should be undertaken by a joint committee of the R.I.B.A., the Institution of Electrical Engineers, the N.E.C.A. and any other body vitally concerned. Mr. Rawlings's paper contained some attacks upon consultants, but on the whole it breathed a friendly spirit. After a successful debate, a committee was appointed to undertake the preliminaries in the formulation of an official specification.

### The Magnetic "Storm."

It is a pity that the daily press does not attempt to inform itself better on matters of scientific interest. The causes of the magnetic disturbance are not all known to science, but certain established facts, combined with modern theories that dovetail in and have not so far been disproved, offer a reasonable explanation. The facts are these:—Firstly, the earth is a magnet having two poles, and like all magnets, lines of magnetic force are thrown out from the two poles; these curve round and tend to meet each other. Secondly, there are certain steady currents in the earth, which are allowed for in telegraphic systems. Thirdly, when a "discharge" takes place in a vacuum tube, a luminous stream of particles is shot from one terminal to another; this stream can be deflected by a magnet, and according to modern theory it comprises particles of matter, or disembodied electricity, the terms being synonymous. It is, in fact, an electric current. Fourthly, the aurora borealis is merely the effect produced by such a stream of electrified particles constantly being shot out by the sun, which become deflected by and entangled in the lines of magnetic force around the poles; this can be proved by experiment. The effect of any specially violent discharge from the sun would be to produce a disturbance further from the poles than usual, and this would account for the occasional appearance of the aurora in lower latitudes. Such a disturbance must then induce specially strong currents for the time being, and such as to disturb telegraphic systems in which allowance has only been made for the normal disturbances. That these displays occur at sun-spot periods may or may not be a coincidence; but probably the two disturbances have some connection.

A. M. I. E. E.

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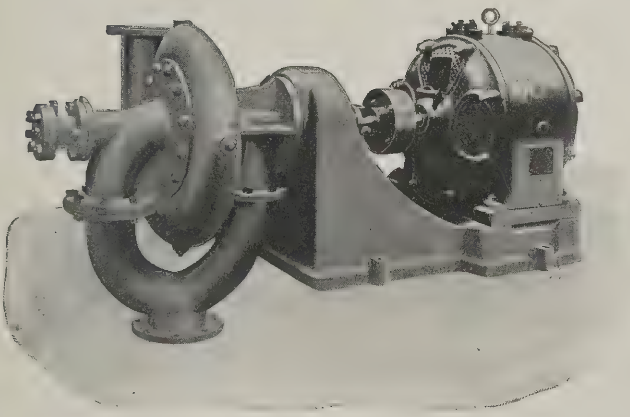

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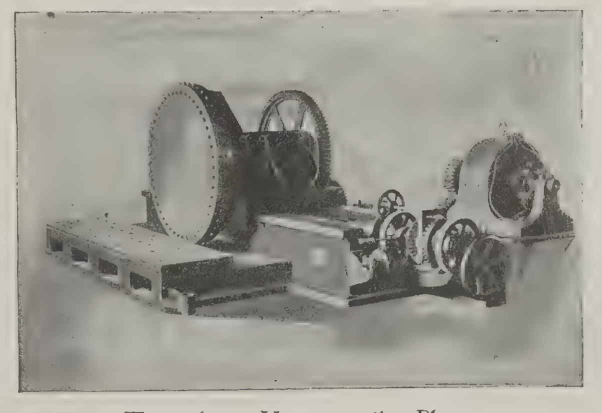

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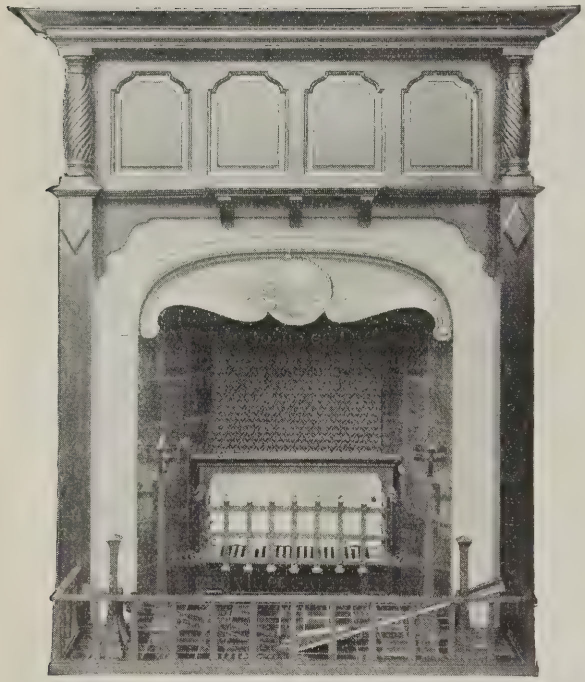

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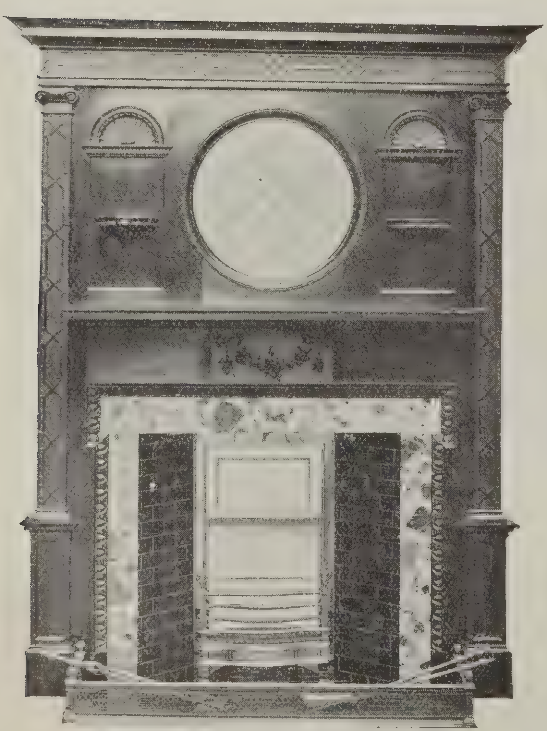

Chippendale Chimneypiece in Mahogany with tiled interior. Price on application.

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# Builders' Notes.

In Messrs. Hugh Baird & Sons' Maltings at Springbank, Glasgow, a fire recently occurred, when the protective qualities of Uralite were strikingly illustrated. In the centre of the building which was burned there was a 5-h.p. motor, which after the fire was found to be absolutely intact, this being due to the fact that it was cased round with a box covered with Uralite.

**The new Isolation Hospital at Epsom** comprises three blocks for scarlet fever, typhoid and diphtheria respectively, in addition to the administration, laundry and disinfecting blocks. The plans were prepared by Mr. E. R. Capon, surveyor to the urban district council. The contractors were Messrs. Roll & Taylor, of Epsom. The sanitary fittings were all supplied by Messrs. Adamsez, Ltd., and included a number of their special cabriole closets and slop sinks, with foot-action bed-pan jets.

**Building Material Tests.**—The fourth international conference for testing building materials will be held next year at St. Petersburg, probably in August. Herr Fetmager, professor of the technical high school at Vienna, has been chosen president of the conference, and as vice-presidents Professor Martins, of the University of Berlin, and Prof. N. A. Belelinsky, of the St. Petersburg Department of Public Works, have been selected.

**Mr. George Wragge**, the well-known craftsman in iron, brass, bronze, &c., metal casements and sashes, stained glass, &c., has, owing to family reasons, converted his business into a limited company, altered in name only. There will be no public issue of shares or outside interference in its working. The staff is retained in its entirety, and Mr. Wragge will have the assistance of Mr. George Ermen, who becomes his co-director. His hope is that the same good feeling which has hitherto existed may be extended to the new firm.

**The Scottish Building Trades' Federation** held its annual meeting in Lamb's Hotel, Dundee, recently. Mr. Thomas C. Stocks, joiner, Dundee, president of the Federation, was in the chair. Reports from the branches as to the state of trade and relations with operatives throughout the country were submitted, from which it appeared that all over the country the building trade was dull and the prospects for the winter not at all hopeful. Mr. John Morgan, builder, Aberdeen, was unanimously elected president, and Mr. William MacDonald, builder, Inverness, vice-president, for the year now beginning.

# Coming Events.

**Wednesday, November 11.**

Edinburgh Architectural Association (Associates' Section).—Mr. Ramsey Traquair on "Notes on later Scotch Gothic," at 8 p.m.

Northern Architectural Association.—Opening Meeting of Session. Presidential Address by Mr. J. Walton Taylor, at 7.30 p.m.

Institute of Sanitary Engineers.—Meetings of Examination Literature Committee at 3.30 p.m., of Joint Purposes Finance Committee at 4.15 p.m., of Election Committee at 5.15 p.m., and of Council at 7 p.m.

Sanitary Institute (Lectures and Demonstrations for Sanitary Officers, Part II.).—Mr. W. Hunting on "Signs of Health and Disease in Animals Destined for Food," at 7 p.m. Inspection and Demonstration at a Bakehouse at 3 p.m.

**Thursday, November 12.**

Manchester Society of Architects.—Mr. A. E. Corbett, A.R.I.B.A., on "Modern Domestic Architecture," at 6.45 p.m.

**Friday, November 13.**

Birmingham Architectural Association.—General Meeting. Mr. Charles A. Nicholson on "Modern Church Building," at 6.45 p.m.

Sanitary Institute (Lectures and Demonstrations for Sanitary Officers, Part II.).—Mr. W. Hunting on "The Names and Situations of the Organs of the Body in Animals," 7 p.m.

Egypt Exploration Fund.—General Meeting at Burlington House, W., at 4 p.m.

**Saturday, November 14.**

Glasgow Technical College Scientific Society.—Mr. Alexander Govan on "Motor Cars," at 7.30 p.m.

**Monday, November 16.**

The Surveyors' Institution (Junior Meeting).—First Meeting of Examinees and Students at 7 p.m.

Royal Institute of British Architects.—Monsieur J. T. Homolle on "Le Trésor de Cnide et les Monuments de l'Art Ionien à Delphes," at 8 p.m.

Sanitary Institute (Lectures and Demonstrations for Sanitary Officers, Part II.).—Mr. W. Hunting on "Practical Methods of Stalling and Slaughtering Animals," 7 p.m.

**Tuesday, November 17.**

Society of Designers.—Mr. Hugh Stannus, F.R.I.B.A., on "Ancient Architecture in Egypt," at 8 p.m.

**Wednesday, November 18.**

Architectural Association (Discussion Section).—Mr. M. G. Pechell on "Travelling on the Continent," at 7.30 p.m.

Geological Society.—Meeting at 8 p.m.

Sanitary Institute (Lectures and Demonstrations for Sanitary Officers, Part II.).—Inspection and Demonstration at Harrison & Barber's Knacker Yard, Winthrop Street, Whitechapel, E., at 3 p.m., conducted by Mr. H. King Shaw.

Northern Architectural Association.—Students' Evening.

Glasgow Architectural Association.—Mr. Wilson on "The Palace of Versailles," at 8 p.m.

# Bankruptcies.

[Abbreviations: R.O.—receiving order; P.E.—public examination; C.C.—county court; O.R.—official receiver; Adj.—Adjudication.]

R. Smith, builder, Dunston. R.O. Oct. 29th.

H G. Wass, builder, Nottingham. R.O. Oct. 30th.

R. Farr & Sons, decorators, Wealdstone. P.E., St. Albans C.C., Dec. 1st, at 12.

J. Franklin, builder, Walthamstow. R.O. Oct. 27th. P.E., London Bankruptcy Court, Dec. 10th, at 11.30.

F. Egerton Hine & Co., wallpaper merchants, London. Adj. Oct. 31st.

Mordecai Brothers, builders, Tottenham. R.O. Oct. 26th.

R. H. Parkyn, builder, Liswerry and Newport, Mon. R.O. Oct. 27th.

W. H. Henson, plumber and glazier, Latimer. Adj Oct. 20th.

Atkin, Burrell & Co., builders, Newcastle-on-Tyne. R.O. Oct. 29th.

G. Mitchell, stone merchant, Portland. R.O. Oct. 28th.

R. O. & G. Saxton, builders, Upton Manor. Adj. Oct. 26th.

J. Ellis, surveyor, Charlton. P.E., Greenwich C.C., Nov. 24th, at 1.

T. E. Moore, builder, Leicester. P.E., The Castle, Leicester, Nov. 20th, at 10. Gross liabilities £1,872; £865 expected to rank; deficiency £524.

E. Hillman, builder and contractor, Laindon. First meeting, 14, Bedford Row, London, W.C., Nov. 13th, at 12. P.E., Chelmsford Shirehall, Dec. 2nd, at 10.

W. Hill, builder, Portslade. R.O. Oct. 28th. First meeting, O.R.'s, Brighton, Nov. 12th, at 11.30. P.E., Brighton C.C., same, at 11.

S. T. Letts, painter and decorator, Erdington. First meeting, 174, Corporation Street, Birmingham, Nov. 12th, at 11. P.E., Birmingham C.C., Dec. 9th, at 2.

J. H. Collett, builder, King's Heath. R.O. Oct. 27th. First meeting, 174, Corporation Street, Birmingham, Nov. 13th, at 11. P.E., Birmingham C.C., Dec. 10th, at 2.

F. Allinson, joiner and builder, Leeds. R.O. Oct. 28th. First meeting, O.R.'s, Leeds, Nov. 11th, at 11.30. P.E., Leeds C.C., Nov. 24th, at 11.

F. A. Cornbill, builder and contractor, Wakefield. R.O. Oct. 28th. First meeting, O.R.'s, Wakefield, Nov. 11th, at 10.30. P.E., Wakefield C.C., Dec. 3rd, at 11.

S. Wilkinson, painter and paperhanger, Leeds. R.O. Oct. 29th. First meeting, O.R.'s, Leeds, Nov. 11th, at 12. P.E., Leeds C.C., Nov. 24th, at 11.

A. W. Martin, builder, Nottingham. Gross liabilities £9,882; £8,561 fully secured; £1,265 expected to rank for dividend; deficiency £695.

J. Slater & Son, builders and contractors, Newcastle-on-Tyne. R.O. Oct. 27th. First meeting, O.R.'s, Newcastle, Nov. 11th, at 11.30. P.E., Newcastle C.C., Nov. 26th, at 11.

The following companies are to be wound up:—

Banks' Fireproof Construction Syndicate, Ltd.

Barnacle Hall Brickworks, Ltd.

Brislington Grove Estate Co., Ltd. S. P. Jackson, Albion Chambers, Broad Street, Bristol, liquidator.

British Canadian Timber and Manufacturing Co., Ltd. F. R. Keston, 20, High Street, Wycombe, liquidator.

Builders' Wholesale Supply Co., Ltd., 17, Coleman Street, London, E.C.

Bungalow Building Co., Ltd., London, W.C.

Everton Timber Co., Ltd.

Marmorite Artistique Syndicate, Ltd. E. H. Walker, 25, College Hill, Cannon Street, E.C., liquidator.

Nevin Bay Granite Quarry Co., Ltd.

Noiseless Flush Cistern Co., Ltd.

# Current Market Prices.

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| | | £ | s. | d. | £ | s. | d. |
|---|---|---|---|---|---|---|---|
| Beans .. .. .. | per qr. | 1 | 14 | 0 | 2 | 0 | 0 |
| Clover, best .. .. | per load | 4 | 5 | 0 | 4 | 10 | 0 |
| Hay, good .. .. .. | do. | 3 | 12 | 6 | 4 | 0 | 0 |
| Sainfoin mixture .. | do. | 3 | 15 | 0 | 4 | 5 | 0 |
| Straw .. .. .. | do. | 1 | 10 | 0 | 2 | 0 | 0 |

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|---|---|---|---|---|---|---|---|
| Castor Oil, French .. | per cwt. | 1 | 0 | 5 | | — | |
| Colza Oil, English .. | do. | 1 | 3 | 0 | | — | |
| Copperas .. .. | per ton | 2 | 0 | 0 | | — | |
| Lard Oil .. .. .. | per cwt. | 2 | 15 | 0 | 2 | 17 | 0 |
| Lead, white, ground, carbonate .. .. | do. | 1 | 4 | 10 | | — | |
| Do red .. .. .. | do. | 1 | 0 | $4\frac{1}{2}$ | | | |
| Linseed Oil, barrels .. | do. | 0 | 17 | 9 | | — | |
| Petroleum, American .. | per gal. | 0 | 0 | $7\frac{6}{8}$ | 0 | 0 | $7\frac{3}{4}$ |
| Do. Russian .. | do. | 0 | 0 | $5\frac{3}{4}$ | 0 | 0 | $8\frac{1}{8}$ |
| Pitch .. .. .. | per barrel | 0 | 8 | 0 | | — | |
| Shellac, orange .. .. | per cwt. | 11 | 3 | 0 | | — | |
| Soda, crystals .. .. | per ton | 3 | 2 | 6 | 3 | 5 | 0 |
| Tallow, Town .. .. | per cwt. | 1 | 7 | 6 | | — | |
| Tar, Stockholm .. .. | per barrel | 1 | 0 | 6 | | — | |
| Turpentine .. .. | per cwt. | 2 | 3 | $4\frac{1}{2}$ | | — | |

## METALS.

| | | £ | s. | d. | £ | s. | d. |
|---|---|---|---|---|---|---|---|
| Copper, sheet, strong .. | per ton | 73 | 0 | 0 | | — | |
| Iron, Staffs., bar .. .. | do. | 6 | 5 | 0 | 6 | 7 | 6 |
| Do. Galvanised Corrugated sheet .. | do. | 11 | 0 | 0 | 11 | 5 | 0 |
| Lead, pig, Soft Foreign .. | do. | 11 | 3 | 9 | | — | |
| Do. do. English common brands .. .. | do. | 11 | 10 | 0 | 11 | 12 | 6 |
| Do. sheet English 3lb. per sq. ft and upwards .. | do. | 14 | 0 | 0 | | — | |
| Do. pipe .. .. .. | do. | 15 | 0 | 0 | | — | |
| Nails, cut clasp, 3in. to 6in. | do. | 9 | 5 | 0 | | — | |
| Do. floor brads .. | do. | 9 | 0 | 0 | | — | |
| Steel, Staffs., Girders and Angles .. .. | do. | 5 | 15 | 0 | 7 | 2 | 6 |
| Do. do. Mild bars .. | do. | 6 | 0 | 0 | 6 | 5 | 0 |
| Tin, Foreign .. .. | do. | 115 | 17 | 6 | 116 | 7 | 6 |
| Do. English ingots .. | do. | 120 | 0 | 0 | 121 | 10 | 0 |
| Zinc, sheets, Silesian .. | do. | 23 | 2 | 6 | | — | |
| Do. do. Vielle Montaigne | do. | 23 | 10 | 0 | | — | |
| Do. Spelter .. .. | do. | 21 | 0 | 0 | 21 | 2 | 6 |

## TIMBER.

### Soft Woods.

| | | £ | s. | d. | £ | s. | d. |
|---|---|---|---|---|---|---|---|
| Fir, Dantzic and Memel | per load | 1 | 13 | 0 | 3 | 0 | 0 |
| Pine, Quebec, Yellow .. | do. | 5 | 5 | 0 | 6 | 5 | 0 |
| Do. Pitch .. .. | do. | 2 | 12 | 0 | 3 | 3 | 0 |
| Laths, log, Dantzic .. | per fath. | 4 | 10 | 0 | 5 | 10 | 0 |
| Do. St. Petersburg .. | do. | 7 | 5 | 0 | | — | |
| Deals, Skönvik Yellow, $2\frac{1}{2}$×7 | per stan. | 5 | 0 | 0 | | — | |
| Do. St. Petersburg, Yell., 3rd, 3×11 | do. | 7 | 5 | 0 | | — | |
| Do. do. do. do. 3×9 | do. | 7 | 10 | 0 | 8 | 10 | 0 |
| Do. do. do. do. 3×7 | do. | 7 | 15 | 0 | | — | |
| Do. do. White, 3rd, 3×9 | do. | 9 | 0 | 0 | | — | |
| Do. do. do. do. 3×7 | do. | 7 | 15 | 0 | | — | |
| Do. Soderhamn, Yellow, 3rd, 3×9 | do. | 14 | 5 | 0 | | — | |
| Do. Oserka, Yellow, unsorted, 7×7 | do. | 8 | 15 | 0 | 9 | 0 | 0 |
| Do. Montreal, Yellow Pine, 1st, 3×11×3ft. | do. | 13 | 15 | 0 | | — | |
| Do. do. Red Pine, 2nd, 3×7 | do. | 8 | 10 | 0 | | — | |
| Do. Quebec, Bright Spruce, 2nd, 3×8 | do. | 8 | 10 | 0 | | — | |
| Do. do. do. do. do. 3×7 | do. | 8 | 0 | 0 | | — | |
| Do. Bathurst, 1st, 2nd and 3rd, unsorted Spruce, 3×7 | do. | 7 | 5 | 0 | | — | |
| Do. Galatz, 1st, White, 3×9 | do. | 10 | 10 | 0 | | — | |
| Do. Soderhamn, 1st and 2nd White, 3×11 | do. | 12 | 5 | 0 | | — | |
| Do. Oserko, unsorted Yellow, 3×8 | do. | 9 | 15 | 0 | | — | |
| Do. Onega, 1st White, 3×9 | do. | 11 | 15 | 0 | 12 | 0 | 0 |
| Do. Mesane, 3rd Yellow, 3×9 | do. | 13 | 0 | 0 | | — | |
| Do. Petschora, 3rd White, 3×9 | do. | 8 | 15 | 0 | | — | |
| Do. do. Unsorted do., 3×8 | do. | 8 | 5 | 0 | | — | |
| Battens, all kinds .. | do. | 6 | 10 | 0 | 21 | 15 | 0 |
| Flooring Boards 1in. prepared, 1st .. .. | per square | 0 | 11 | 6 | 0 | 12 | 3 |
| Do. 2nd .. .. | do. | 0 | 9 | 6 | | | |
| Do. 3rd, &c. .. .. | do. | 0 | 8 | 6 | 0 | 10 | 3 |

### Hard Woods.

| | | £ | s. | d. | £ | s. | d. |
|---|---|---|---|---|---|---|---|
| Ash, Quebec .. .. | per load | 3 | 12 | 6 | | — | |
| Birch, Quebec .. .. | do. | 3 | 12 | 6 | 3 | 17 | 0 |
| Box, Turkey .. .. | per ton | 15 | 0 | 0 | 20 | 0 | 0 |
| Cedar, Cuba .. .. | per ft. sup. | 0 | 0 | $5\frac{1}{4}$ | | — | |
| Do. Honduras .. | do. | 0 | 0 | $5\frac{31}{32}$ | | — | |
| Do. Tobasco .. .. | do. | 0 | 0 | $4\frac{31}{32}$ | | — | |
| Elm, Quebec .. .. | per load | 4 | 0 | 0 | | — | |
| Mahogany, Average Price for Cargo, Honduras .. | per ft. sup. | 0 | 0 | $6\frac{25}{32}$ | | — | |
| Do. African .. | do. | 0 | 0 | $4\frac{7}{32}$ | | — | |
| Do. St. Domingo | do. | 0 | 0 | $3\frac{29}{32}$ | | — | |
| Do. Cuba .. | do. | 0 | 0 | $3\frac{29}{32}$ | 0 | 0 | $4\frac{11}{16}$ |
| Do. Lagos .. | do. | 0 | 0 | $3\frac{5}{8}$ | | — | |
| Do. Benin .. | do. | 0 | 0 | $4\frac{11}{32}$ | | — | |
| Do. Tobasco .. | do. | 0 | 0 | $6\frac{11}{32}$ | 0 | 0 | $8\frac{1}{4}$ |

# Complete List of Contracts Open.

| DATE OF DELIVERY. | WORK TO BE EXECUTED. | FOR WHOM. | FROM WHOM FORMS OF TENDERS MAY BE OBTAINED. |
|---|---|---|---|
| | **BUILDING:** | | |
| Nov. 12 | Herne Bay—Alterations, &c., to Town Hall | Urban District Council | F. W. J. Palmer, Surveyor, Council Offices, Town Hall, Herne Bay. |
| „ 12 | Antrim, Ireland – Dispensary and Residence | Guardians | N. Fitzsimons, 82 Royal Avenue, Belfast. |
| „ 12 | Bradford, Yorks – Retorts, Firebricks, &c. | Corporation | Gas Engineer, Town Hall, Bradford. |
| „ 13 | Newry—Alterations to Workhouse | Union Guardians | W. R. Bell, Clerk, Workhouse, Newry. |
| „ 13 | Birmingham—Bricks, Lime, Cement, &c. | Water Committee | E. A. Lees, Secretary, 41 Broad Street, Birmingham. |
| „ 14 | Liscard, Cheshire—School | Wallasey Education Committee | E. Kirby, 6 Cork Street, Liverpool. |
| „ 14 | Milnthorpe—Wall round Burial Ground, &c. | ——— | Rev. G. E. P. Reade, Vicarage, Milnthorpe. |
| „ 14 | Darfield, Yorks—Cloak-room, &c., at School | ——— | A. B. Linford, Architect, Carlton Villa, Wombwell. |
| „ 14 | Lancaster—Stone Wall | Streets Committee | J. C. Mount, Borough Surveyor, Town Hall, Lancaster. |
| „ 16 | Bradford—Enlargement of Central Offices | Guardians | Empsall & Clarkson, 7 Exchange, Bradford. |
| „ 16 | Ebbw Vale—Caretakers' Ho., Alterations, &c., to Fire Statn. | Urban District Council | S. J. Thomas, Town Surveyor, District Council Offices, Ebbw Vale. |
| „ 16 | Normanton—Alterations, &c., to Police Station | West Riding County Council | J. V. Edwards, County Architect's Office, County Hall, Wakefield. |
| „ 16 | Chadderton—Library | Urban District Council | A. R. Groome & J. L. Grant, 2 St. Peter's Square, Manchester. |
| „ 16 | Castletownbere, Ireland—Alterations, &c., to Hotel | ——— | S. F. Hynes, 71 South Mall, Cork. |
| „ 16 | Middleton, Lancs—Lavatory, Urinal, &c. | Corporation | W. Welburn, Borough Surveyor, Town Hall, Middleton. |
| „ 16 | Salford—Terra-Cotta | Education Committee | H. Lord, 42 Deansgate, Manchester. |
| „ 16 | Bristol—Cement | Corporation | T. H. Yabbicom, City Engineer, 63 Queen Square, Bristol. |
| „ 17 | Pontnewydd, Wales—Gallery in Chapel | ——— | Rev. D. Davies, Maindee Place, Pontnewydd, Wales. |
| „ 18 | Leeds—Bridge | ——— | City Engineer, Municipal Buildings, Leeds. |
| „ 18 | Witton, Birmingham—Bricks, Fireclay, Lime, &c. | Kynoch, Ltd. | Secretary, Kynoch, Ltd., Witton, Birmingham. |
| „ 18 | Bootle, Lancs—Stone Steps, Copings and Piers | Corporation | B. J. Wolfenden, Borough Engineer, Bootle, Lancs. |
| „ 18 | Nelson, Lancs—Fireclay Goods | Gas Committee | A. J. Hope, Gasworks, Nelson, Lancs. |
| „ 18 | Bootle—Brick Wall, Stone Coping, and Piers | Corporation | B. J. Wolfenden, Borough Engineer, Bootle. |
| „ 19 | Lindal-in-Furness—Branch Library | Urban District Council | W. Richardson, Surveyor, Council Offices, Dalton-in-Furness. |
| „ 19 | Nantwich—Infirmary | Guardians | C. E. Davenport 152 Hospital Street, Nantwich. |
| „ 20 | Felixstowe—House | Admiralty | Director of Works Department, Admiralty, 21 Northumberland Avenue, W.C. |
| „ 20 | Newcastle-upon-Tyne—Alterations, &c. to School | Education Committee | A. Goddard, Secretary, Education Offices, Northumberland Road, Newcastle-upon-Tyne |
| „ 20 | Dublin—Cement | Commissioners of Irish Lights | O. Armstrong, Secretary, Irish Lights Office, D'Olier St, Dublin. |
| „ 20 | Portsmouth—School | Education Committee | G. E. Smith, 145 Victoria Road N., Southsea. |
| | **ENGINEERING** | | |
| Nov. 12 | Ashford, Middlesex—Well | Managers, W. Lon. School Bd. | G. M. Taylor, 27 Great George Street, Westminster, S.W. |
| „ 14 | Blackpool—Traction Set | Elec. & Tramways Committee | C. Furness, Borough Electrical Engineer, Elec. Works, Blackpool. |
| „ 14 | Radcliffe, Lancs—Electric Lighting, &c. | Urban District Council | S. Mills, Clerk, Council Offices, Radcliffe. |
| „ 14 | Glasgow—Weighbridges | Corporation | D. H. Morton, 130 Bath Street, Glasgow. |
| „ 14 | Mountmellick, Ireland—Cooking Apparatus | Guardians | R. Goodbody, Clerk, Workhouse, Mountmellick, Ireland. |
| „ 14 | Blackadon, Devon—Electric Lighting | Corporation | E. G. Okell, Borough Electrial Engineer, Electricity Works, Prince Rock, Plymouth. |
| „ 16 | Swindon—Overhead Equipment | Corporation | Lacey & Sillar, 78 King Street, Manchester. |
| „ 16 | Harrogate—Trunk Mains | Corporation | G. Wilkinson, 33 Swan Road, Harrogate. |
| „ 16 | Grangemouth, Scotland—Waterworks | Town Council | Warren & Stuart, 94 Hope Street, Glasgow. |
| „ 16 | Ebbw Vale, Mon—Trial Holes | Urban District Council | T. J. Thomas, Town Surveyor, Ebbw Vale, Mon. |
| „ 16 | Leeds—Heating Plant | ——— | City Engineer, Municipal Buildings, Leeds. |
| „ 16 | Llanwrtyd Wells, Brecon—Reservoir, &c. | Builth R.D.C. | R. L. Bamford, Surveyor, Wildemarsh Street, Hereford. |
| „ 16 | Bristol—Bridge | Docks Committee | W. W. Squire, Engineer, Cumberland Road, Bristol. |
| „ 17 | Darenth, Dartford, Kent—Telephones | Metropolitan Asylums Board | T. D. Mann, Clerk, Board's Offices, Embankment, E.C. |
| „ 17 | Bilston—Heating Town Hall | Urban District Council | J. P. Wakeford Engineer, Town Hall, Bilston. |
| „ 17 | Linlithgow—Waterworks | District Committee | W. A. Tait, 72A George Street, Edinburgh. |
| „ 17 | Rangoon—Screw Pile Wharf | Port Commissioners | O. Gillanders & Co., Sun Court, 67 Cornhill, E.C. |
| „ 18 | Kilmarnock—Plant | Corporation | Town Clerk, Kilmarnock. |
| „ 20 | Wednesbury—Electric Lighting | Corporation | F. J. Warden-Stevens, 34 Victoria Street, Westminster, S.W. |
| „ 21 | Edinburgh – Electrical Wiring, &c. | Lord Provost, Magistrates, &c, Council. | Resident Electrical Engineer, Dewar Place, Edinburgh. |
| „ 23 | Rochford—Water Supply Works | Rural District Council | H. T. Sidwell, Council's Engineer, Rochford, Essex. |
| 25 | Horwich, Lancs – Reservoir, &c. | Urban District Council | P. Taberner, Clerk, Council Offices, Horwich. |
| „ 30 | Valencia, Spain—Waterworks | ——— | Commercial Intelligence Branch, Board of Trade, 50 Parliament Street, S.W. |
| No date | Stow, Suffolk—Steam Heating, &c, of Workhouse | Guardians | J. S. Corder, Tower Street, Ipswich, Suffolk. |
| | **FURNITURE:** | | |
| Nov. 19 | Downpatrick—Bedsteads | Down District Lunatic Asylum | S. Rea, Clerk, Asylum, Downpatrick. |
| | **IRON AND STEEL:** | | |
| Nov. 13 | Birmingham—Stores | Water Committee | E. A. Lees, Secretary, 44 Broad Street, Birmingham. |
| „ 14 | London, N.E.—Pails and Manholes Covers | Bethnal Green Borough Council | Chief Inspector, Public Health Dept., Town Hall, Bethnal Green. |
| „ 16 | Middlesex—Wrought-iron Railings | Corporation | W. Welburn, Borough Surveyor, Town Hall, Middlesex. |
| „ 16 | Grangemouth, Scotland—Pipes | Town Council | Warren & Stuart, 94 Hope Street, Glasgow. |
| „ 16 | Warwick—Iron Fencing, &c., Workhouse Gates | Guardians | F. P. Trepass, 1 Church Street, Warwick. |
| „ 16 | Aberdeen—Street Lamps | Town Council | Lighting Inspector, 262 King Street, Aberdeen. |
| „ 16 | Bristol—Iron, Steel, Ironmongery, &c. | Corporation | T. H. Yabbicom, City Engineer, Bristol. |
| „ 20 | Dublin—Ironmongery, Castings, &c. | Commissioners of Irish Lights | Owen Armstrong, Sec., Irish Lights Office, D'Oliver Street, Dublin. |
| „ 20 | Witton, Birmingham—Bolts, Nuts, &c. | Messrs. Kynoch, Ltd. | Secretary, Kynoch, Ltd., Witton, Birmingham. |
| „ 25 | Dublin—Railway Stores | Gt. Southern & Western Railway (Ireland) Co. | Storekeeper, General Stores, Inchicore, Dublin. |
| „ 27 | Warrington—Railway Stores | Cheshire Lines Committee | S. S. Barton, Stores Superintendent, Cheshire Lines, Warrington. |
| | **PAINTING AND PLUMBING:** | | |
| Nov. 13 | Birmingham—Lead Piping, Pig Lead, Brushes, Paints, &c. | Water Committee | E. A. Lees, Secretary, 44 Broad Street, Birmingham. |
| „ 14 | Downpatrick—Bath-room, &c., Accommodation | Guardians | R. L. Morrow, Clerk, Downpatrick. |
| „ 14 | Witton, Birmingham – Putty, Red Lead, White Lead, Driers | Kynoch Ltd. | Secretary, Kynoch Ltd., Witton, Birmingham. |
| „ 16 | Bristol – Paints, Brushes, &c. | Corporation | T. H. Yabbicom, City Engineer, Bristol. |
| „ 17 | Lavenham, Suffolk – Painting, &c. | Education Committee | J. O. Steeds, Long Melford. |
| „ 20 | Dublin—Coppersmith and Plumbing Work | Commissioners of Irish Lights | Owen Armstrong Sec, Irish Lights Office, D'Olier Street, Dublin. |
| „ 25 | Dublin—Varnishes, Colours, &c. | Gt. Southern & Western Railway (Ireland) Co. | F. B. Ormsby, Secretary, Kingsbridge Terminus, Dnblin. |
| „ 27 | Warrington—Oils, White Lead, Lead Sheet and Piping, &c. | Cheshire Lines Committee | S. S. Barton, Stores Superintendent, Cheshire Lines, Warrington. |
| | **ROADS AND CARTAGE:** | | |
| Nov. 13 | Bexhill—Stone, &c., Quartzite Macadam | Corporation | G. Ball, Borough Surveyor, Bexhill. |
| „ 14 | Milnthorpe—Cemetery Road and Paths | ——— | Rev. G. E. P. Reade, Vicarage, Milnthorpe. |
| „ 14 | Blackpool – Private Street Works | Corporation | J. S. Brodie, Borough Surveyor, Town Hall, Blackpool. |
| „ 14 | Lancaster—Street Works, &c. | Streets Committee | J. C. Mount, Borough Surveyor, Town Hall, Lancaster. |
| „ 14 | Wimbledon—Making-up, &c., Roads | Urban District Council | C. H. Cooper, Surveyor, Council Offices, The Broadway, Wimbledon. |
| „ 14 | Radcliffe, Lancs—Pitch and Oil | Urban District Council | W. L. Rothwell, Engineer, Council Offices, Radcliffe. |
| „ 16 | London, W.—Tip Carts and Vans | St. Marylebone Borough Council | J. P. Waddington, Engineer, Town Hall, London, W. |
| „ 16 | Wolverhampton – Street Works | Streets Committee | Borough Engineer, Town Hall, Wolverhampton. |
| „ 16 | Kingston-upon-Thames—Granite, &c. | Guardians | J. Edgell, Clerk, Union Offices, Coombe Rd., Kingston-on-Thames. |
| „ 16 | Sevenoaks—Quartzite | Urban District Council | S. Towlson, Surveyor, Council Offices, Argyle Rd., Sevenoaks. |
| „ 16 | Uttoxeter—Road, &c. | Rural District Council | J. Preston, Surveyor, Woodlands, Uttoxeter. |
| „ 17 | Croydon—Road Repairs, &c. | Town Council | Borough Road Surveyor, Town Hall, Croydon. |
| „ 18 | London E.—Paving, &c. | Poplar Borough Council | Borough Surveyor, Council Offices, High Street, Poplar, E. |
| „ 18 | New Mills—Grit Setts | Urban District Council | Surveyor, Town Hall, New Mills. |
| „ 19 | Manchester—Street Works | Paving, Sewering and Highways Committee. | Paving Department, Surveyor's Office, Town Hall, Manchester. |
| „ 24 | West Ham—Street Works | Borough Council | J. G. Morley, Borough Engineer, Town Hall, West Ham, E. |
| „ 25 | Hampton Wick—Flints | Urban District Council | H. Fawsett, Clerk, Council Offices, High Street, Hampton Wick. |
| „ 26 | Birmingham—Material | Warwickshire County Council | J. Willmot, County Surveyor, Birmingham. |
| 1904. Jan. 19 | Rotherhithe and Radcliffe—Carriageway | London County Council | Engineer's Department, County Hall, Spring Gardens S W. |

# Complete List of Contracts Open —*continued*

| DATE OF DELIVERY. | | WORK TO BE EXECUTED. | FOR WHOM. | FROM WHOM FORMS OF TENDERS MAY BE OBTAINED. |
|---|---|---|---|---|
| | | **SANITARY:** | | |
| Nov. | 12 | Whitehaven—Rearrangement of Drainage and Sewers | J. Dalzell's Paton & Harrington Breweries, Ltd. | W. Carmichael, Architect, Paton, Whitehaven. |
| „ | 13 | Birmingham—Drain Pipes, &c. | Water Committee | E. A. Lees, Secretary, 44 Broad Street, Birmingham. |
| „ | 16 | Spennymoor, Durham—Disinfectants | Urban District Council | A. Dowdell, Sanitary Inspector, Spennymoor. |
| „ | 16 | Bristol—Drain Pipes, &c. | Corporation | T. H. Yabbicom, City Engineer, Bristol. |
| „ | 17 | London, E.C.—Sewer | Corporation | Engineer, Public Health Department, Guildhall, E.C. |
| „ | 17 | Market Bosworth—Sewerage Works | Rural District Council | W. M. Sykes, Surveyor, Market, Bosworth, Nuneaton. |
| „ | 20 | Seisdon, Wolverhampton—Sewers, &c. | Rural District Council | R. E. W. Berrington, Bank Buildings, Wolverhampton. |
| „ | 23 | Bury St. Edmunds—Sewage Works | Corporation | G. R. Strachan, 7 Victoria Street, Westminster, S.W. |
| „ | 24 | Belper—Sewage Outfall Works | Urban District Council | C. J. Lomax, 37 Cross Street, Manchester. |
| „ | 25 | Wanstead—Scavenging, &c. | Urban District Council | Clerk, Council Offices, Wanstead, N.E. |
| „ | 25 | Dublin—Sewer Pipes, &c. | Gt. Southern and Western Railway (Ireland) Co. | Storekeeper, General Stores, Inchicore, Dublin. |
| „ | 27 | Lichfield, Staffs—Sewerage Works | Corporation | Elliott & Brown, Engineers, Burton Buildings, Parliament Street, Nottingham. |
| „ | 27 | Warrington—Drain Pipes, &c. | Cheshire Lines Committee | S. S. Barton, Stores Superintendent, Cheshire Lines, Warrington. |
| | | **TIMBER:** | | |
| Nov. | 20 | Dublin—Planks, Deals, &c. | Commissioners of Irish Lights | O. Armstrong, Secretary, Irish Lights Office, D'Olier St., Dublin. |
| „ | 20 | Witton, Birmingham—Timber &c. | Kynoch, Ltd. | Secretary, Kynoch, Ltd., Witton, Birmingham. |
| „ | 27 | Warrington—Sleepers, &c. | Cheshire Lines Committee | S. S. Barton, Stores Superintendent, Cheshire Lines, Warrington. |
| „ | 30 | Copenhagen—Timber, &c. | Danish State Railways | Office of Locomotive Department (3 Sal), G. C. Kongevej, 1, D, Copenhagen. |

# List of Competitions Open.

| DATE OF DELIVERY. | | DESIGNS REQUIRED. | AMOUNT OF PREMIUM. | DEPOSIT REQUIRED FOR CONDITIONS, &c. | BY WHOM ADVERTISED |
|---|---|---|---|---|---|
| Nov. | 14 | Tamworth—Public Library | £20, £10, £5 | —— | J. Matthews, Town Clerk, Bolebridge Street, Tamworth. |
| „ | 21 | Sunderland—Additions & Alterations to Town Hall | £100, £50, £25. | £5. | J. W. Moncur, Borough Engineer, Town Hall, Sunderland. |
| „ | 30 | Bray—Pavilion and Winter Gardens | £30, £15, £10, and 3 prizes of £5 5s. each. | —— | F. Bethell, E. Lee and P. MacDonnell, Hon. Secretaries, Town Hall, Bray. |
| Dec. | 1 | Wakefield—Reconstruction of Cattle Market | £52 10s., £26 5s. | £2. | E. R. Langhorne, Clerk to Governors of Charities, Wakefield. |
| „ | 7 | Elgin—School Buildings (340 pupils) | —— | —— | H. Stewart, Clerk, Landward School Board, Elgin. |
| „ | 7 | Seily Oak, near Birmingham—Public Baths | —— | £1 1s. | A. W. Cross, 23 Valentine Road, King's Heath, near Birmingham. |
| „ | 16 | Lambeth—Public Library | —— | —— | H. J. Smith, Clerk, Town Hall, Kennington Green, S.E. |
| 1904 | | | | | |
| Jan. | 15 | Windsor—Police and Fire Brigade Stations | £26 5s. | £1. | E. A. Stickland, Borough Surveyor, Town Council Offices, Windsor. |
| Mar. | 31 | Vienna—Machinery to Lift Boats on Canal | 100,000, 75,000 & 50,000 kronen. | —— | Austro-Hungarian Consulate-General, 22 Laurence Pountney Lane, E.C. |
| No date | | Fraserburgh, Scotland—Hospital, &c. | —— | —— | W. Alexander, Burgh Surveyor, Fraserburgh. |
| „ | | Rochdale—School (Limited to Local Architects) | —— | —— | J. E. Holden, Secretary to Education Committee, Baillie St., Rochdale. |

# Tenders.

*Information from accredited sources should be sent to "The Editor" at latest by noon on Monday if intended for ublication in the following Wednesday's issue. Results of enders cannot be accepted unless they contain the name of he Architect or Surveyor for the work.*

*Addressed postcards on which lists of tenders may be tated will be sent post free on application to the Manager,* UILDERS' JOURNAL, 6, *Great New Street, Fetter Lane, E.C.*

**Bridlington.**—For the erection of five cottages and lterations to two existing cottages, North Back Lane, ridlington. Mr. Alfred T. Martindale, architect:—

| | | | |
|---|---|---|---|
| I. Stork | £930 | 8 | 6 |
| W. J. H. Hudson | 892 | 10 | 0 |
| J. Rennard | 888 | 15 | 0 |
| E. Wilson | 835 | 10 | 0 |
| F. Flintoff | 830 | 0 | 0 |
| Smallwood & Shaw | 821 | 2 | 6 |
| F. Kneeshaw | 821 | 0 | 0 |
| H. Hoggard | 788 | 5 | 0 |
| J. Sawdon | 773 | 0 | 0 |
| W. Barnes* | 740 | 0 | 0 |

* Accepted. [All of Bridlington.]

**Eastbrook and Dinas Powis (Wales).**—For the onstruction of sewers, manholes, ventilators, flushing tations, and all works incidental thereto, required in onnection with the sewerage of Eastbrook and Dinas owis, in the parish of St. Andrews, in the county of lamorgan, for the Llandaff and Dinas Powis Rural istrict Council:—

| | | | |
|---|---|---|---|
| B. Cooke & Co., London | £12,630 | 4 | 10 |
| J. Rees, Llandaff | 12,590 | 10 | 10 |
| J. Gibson | 12,580 | 0 | 0 |
| F. Ashley | 12,279 | 12 | 3 |
| C. Davies,* 35, Court Road | 11,490 | 3 | 2 |
| J. E. Evans | 9,491 | 5 | 4 |

* Accepted. [Rest of Cardiff.]

**Harold Wood (Essex).**—For the erection of a detached ouse at Harold Wood, Essex. Mr. D. S. Stephens, rchitect, 11, High Street, Romford:—

| | | | |
|---|---|---|---|
| J. Philpot | £1,291 | 14 | 0 |
| Hammond & Son | 1,271 | 0 | 0 |
| Dowsing & Davis | 1,250 | 10 | 0 |
| W. Hunnable* | 1,179 | 16 | 0 |

* Accepted.

**Hereford.**—For extension of Hereford Post Office, for .M. Office of Works, &c.:—

| | | | | A | | |
|---|---|---|---|---|---|---|
| olt, Davies & Co. | £2,573 | 0 | 0 | £83 | 12 | 5 |
| W. Wilks | 2,455 | 0 | 0 | 135 | 0 | 0 |
| Webb | 2,400 | 0 | 0 | 100 | 0 | 0 |
| P. Lewis & Co. | 2,320 | 0 | 0 | 100 | 0 | 0 |
| Broad, Ltd. | 2,285 | 14 | 0 | 44 | 5 | 5 |
| Cooke | 2,200 | 0 | 0 | 80 | 0 | 0 |
| Bowers & Co. | 1,840 | 0 | 0 | 86 | 0 | 0 |

A.—Credit old materials.

**Hull.**—For the erection of thirty-two artizan's dwellings Steynberg Street, for the City Improvement Com- ittee. Mr. Joseph H. Hirst, city architect, Town Hall, ull:—

| | | | |
|---|---|---|---|
| H. Kaye | £7,377 | 0 | 0 |
| Simpson & Sons | £7,375 | 0 | 0 |
| F. Arnott | 7,242 | 7 | 8 |
| T. Goates | 6,950 | 0 | 0 |
| Hill & Stevenson | 6,909 | 11 | 5 |
| E. Good & Sons | 6,900 | 17 | 4 |
| G. H Scorrer | 6,795 | 0 | 0 |
| Bowman & Sons | 6,788 | 0 | 0 |
| G. Jackson & Sons, Witham | 6,734 | 8 | 0 |
| F. Singleton | 6,563 | 17 | 8 |
| J. H. Fenwick | 6,510 | 9 | 0 |
| J. R. Woods | 6.438 | 0 | 0 |
| G. F. Blackburn | 6,364 | 3 | 0 |

* Accepted. [Rest of Hull.]

**Llandaff (Wales).**—For the construction of pumping station, sewage tanks, sewers, manholes, ventilators, flushing stations, &c., required in connection with the sewerage of Fairwater Grove, in the parish of Llandaff, for the Llandaff and Dinas Powis Rural District Council. Mr. James Holden, engineer, Llandaff Chambers, 35, St. Mary Street, Cardiff:—

| | | | |
|---|---|---|---|
| Barnes, Chaplin & Co. | £3,185 | 14 | 8 |
| E. Osmund | 2,685 | 13 | 4 |
| C. Davies | 2,664 | 17 | 4 |
| J. E. Evans | 2,660 | 19 | 5 |
| J. Rees, Llandaff | 2,625 | 13 | 4 |
| F. Ashley | 2,532 | 14 | 5 |
| Public Works Co.,* 20, Victoria Street, London | 2,427 | 10 | 9 |

* Accepted. [Rest of Cardiff.]

**London.**—For the erection of a new school, Finlay Street, Fulham, for the London School Board. Mr. T. J. Bailey, Board's architect:—

| | | | |
|---|---|---|---|
| J. Carmichael | £24,365 | 0 | 0 |
| J. Simpson & Son | 23,184 | 0 | 0 |
| Martin, Wells & Co., Ltd. | 23,170 | 0 | 0 |
| J. Allen & Sons, Ltd. | 22,897 | 0 | 0 |
| J. Garrett & Son | 22,575 | 0 | 0 |
| F. & H. F. Higgs | 22,556 | 0 | 0 |
| Leslie & Co., Ltd. | 22,089 | 9 | 6 |
| G. E. Wallis & Sons | 21,960 | 0 | 0 |
| E. Lawrence & Sons | 21,558 | 0 | 0 |
| C. F. Kearley | 21,529 | 0 | 0 |
| Treasure & Son | 21,415 | 0 | 0 |
| Holloway Brothers, Ltd. | 21,385 | 0 | 0 |
| Lathey Brothers | 21,380 | 0 | 0 |
| J. & M. Patrick | 20,734 | 0 | 0 |
| Stimpson & Co.* | 20,690 | 0 | 0 |

* Recommended for acceptance.

**London.**—For sanitary and drainage works at Beresford Street School, Walworth, for the London School Board. Mr. T. J. Bailey, Board's architect:—

| | | | |
|---|---|---|---|
| Martin, Wells & Co., Ltd. | £3,200 | 0 | 0 |
| W. Downs | 2,768 | 0 | 0 |
| Maxwell Brothers, Ltd. | 2,079 | 0 | 0 |
| J. W. Falkner & Sons | 2,064 | 0 | 0 |
| R. P. Beattie | 2,023 | 1 | 6 |
| Lathey Brothers | 2,021 | 0 | 0 |
| J. Appleby & Sons | 1,920 | 0 | 0 |
| J. & C. Bowyer* | 1,869 | 0 | 0 |

* Recommended for acceptance.

**London.**—For erection of special school for physically defective children, Forster site, Lower Holloway, for the London School Board. Mr. T. J. Bailey, Board's architect:—

| | |
|---|---|
| Perry & Co. | £5,290 |
| Marchant & Hirst | 5,234 |
| G. S. S. Williams & Son | 5,178 |
| C. Dearing & Son | 5,149 |
| H. Wall & Co. | 5,132 |
| Stevens Brothers | 4,996 |
| J. Allen & Sons, Ltd. | 4,992 |
| J Willmott & Sons | 4,898 |
| J. Simpson & Son | 4,802 |
| W. Gregar & Son | 4,765 |
| J. Grover & Son | 4,675 |
| Treasure & Son | 4,646 |
| J. Chessum & Sons* | 4,433 |

* Recommended for acceptance.

**London, N.** — For pulling down and rebuilding 5, Hoxton Square, N., to be used as stores for the electricity department, for the Shoreditch Borough Council. Mr. J. Rush Dixon, A.M.I.C.E., borough surveyor:—

| | |
|---|---|
| E. D. Pearcey | £2,304 |
| J. Ivory | 1,535 |
| W. Homerson & Sons | 1,497 |
| R. Schooley & Son | 1,489 |
| L. T. Lamplough | 1,439 |
| Gardner & Hazell | 1,347 |
| Kilby & Gayford | 1,335 |
| J Ferguson & Co. | 1,299 |
| General Builders, Ltd. | 1,279 |
| Perry Brothers | 1,219 |
| F. Willmott,* Ilford | 1,120 |

[Borough surveyor's estimate, £1,350.]

* Accepted.

**London, S.E.**—For the erection of depôt buildings on site at St. John's Park, Blackheath, for the Greenwich Borough Council:—

| | |
|---|---|
| Thomas & Edge, Woolwich | £5,198 |
| W. Lawrence & Son, Waltham | 4,749 |
| L. Whitehead & Co., Clapham | 4,705 |
| W. Mills, Westcombe Park | 4 681 |
| W. Martin, Greenwich | 4,631 |
| T. C. Sharpington, Nunhead | 4,588 |
| B. E. Nightingale, London | 4,510 |
| H. L. Holloway, Deptford | 4,485 |
| H. Kent Lewisham | 4,420 |
| T. D Leng, Deptford | 4,360 |
| F. J. Gorham, Greenwich | 4,230 |
| J. F. Oultram, Greenwich | 4,220 |

**London, W.**—For sorting office at Ealing Dean, for H.M. Office of Works, &c.:—

| | | | |
|---|---|---|---|
| W. Martin | £2,229 | 0 | 0 |
| Richardson Brothers | 2,220 | 0 | 0 |
| Patman & Fotheringham, Ltd.† | 2,063 | 0 | 0 |
| C Ansell | 2,020 | 0 | 0 |
| E. Plaistowe | 1,995 | 0 | 0 |
| J. Shelbourne & Co. | 1,991 | 0 | 0 |
| J. Dorey & Co., Ltd. | 1,960 | 0 | 0 |
| H. Willcock & Co. | 1,950 | 0 | 0 |
| Braid, Pater & Co., Ltd. | 1,940 | 0 | 0 |
| E. Hadley & Sons | 1,916 | 18 | 2 |
| Wisdom Brothers | 1,900 | 0 | 0 |
| B. E. Nightingale | 1,884 | 0 | 0 |
| J. Ferguson & Co. | 1,881 | 10 | 0 |
| Speechley & Smith | 1,837 | 0 | 0 |
| General Builders, Ltd.* | 1,797 | 0 | 0 |
| J. Cronk | 1.760 | 10 | 7 |

* Accepted. † Credit old material, £10.

(*Continued on* p. xx.)

**Advertisement Aphorism for the Week.**

*There is but one way of obtaining Business—Publicity—*

*But one way of obtaining Publicity—Advertising.*

## Appointments Wanted.

*The charge for Advertisements under this heading is 1s. 6d. per insertion not exceeding four lines, and 6d. per line afterward, prepaid. Three insertions may be had for the price of two. Advertisements must reach the Office not later than 5 o'clock on Monday.*

A BERTH desired in Architect's office by Assistant Art Master (23) contemplating change of profession; 7½ years' all round Art teaching experience, strong in Architecture and Design, perfect draughtsmanship. Excellent testimonials, accept low commencing salary.—T. T. Nelson, 6, Springhurst Road, Shipley, Yorks.

ADVERTISER (33), a competent Surveyor and Draughtsman, with wide experience of construction and materials, offers his services temporarily for nominal salary in return for practise and expert instruction in quantity work. — Write "Practise," Builders' Journal Office, 6, Great New Street, Fetter Lane, E.C.

AN ARCHITECT has TIME to ASSIST others with Working Drawings, Details, and Perspectives at own office. Special terms for Competitions. Good general experience—Apply, H. L. Fedden, 11, Hart Street, Bloomsbury.

AN ARCHITECT is willing to assist others with designing working drawings from rough sketches, details, furniture delapidations, and superintending works, &c., at own office.—Frank Catling, 3, Featherstone Buildings, Holborn, W.C.

ARCHITECT'S ASSISTANT, six years' experience, requires engagement. Contract drawings, details, &c Surveying, assistance with quantities. Box 2635, Builders' Journal Office, 6, Great New St., Fetter Lane, E.C.

ARCHITECT'S ASSISTANT desires situation as IMPROVER in good Office; Country or Town; Home Counties preferred. Neat and careful draughtsman. Good references.—J. D., Cade House, West Malling, Kent.

ARCHITECT'S ASSISTANT (22½) desires engagement. Good draughtsman, well up in working drawings and details, and measuring up. Moderate salary.—Box 2645, Builders' Journal Office, 6, Great New Street, Fetter Lane, E.C

ARCHITECT'S ASSISTANT (24) desires further experience in good office. London preferred. Accurate, varied experience, details, specifications, perspectives, knowledge of quantities, supply any references required.—Box 2652, Builders' Journal Office, 6, Great New Street, Fetter Lane, E.C.

ARCHITECT'S ASSISTANT desires APPOINTMENT in London office; 5 years' varied experience (2½ years Technical School—practical work—and 2½ years articles); good draughtsman; knowledge of surveying; salary a secondary consideration; highest credentials, and undeniable references; life abstainer.—Box 2655, Builders' Journal Office, 6, Great New Street, Fetter Lane, E.C.

ARCHITECT'S ASSISTANT (29) desires ENGAGEMENT; 10 years' experience; good draughtsman and colourist; well up in working drawings. details, surveying· good references; moderate salary.—A. Randall. Hazelmere, Rusham, Road Egham.

ARCHITECT'S and SURVEYOR'S ASSISTANT desires ENGAGEMENT; Midlands preferred; general experience (gentleman); moderate salary.—Apply Box 2643, Builders' Journal Office, 6, Great New Street, Fetter Lane, E.C.

ARCHITECTURAL DRAUGHTSMAN, Improver, desires re-engagement, age 22, four years' experience builder's office, working and detail drawings, general office routine. Town south of London preferred. —A. W. T., Falconhurst Lodge, Edenbridge.

ARCHITECT'S JUNIOR desires change, 5 years' experience, good references, salary small. —Box 2659, Builders' Journal Office, 6, Great New Street, Fetter Lane, E.C.

A R.I.B.A. with spare time desires to assist in the preparation of Architectural Drawings and Perspectives.—Apply Box 2630, Builders' Journal Office, 6, Great New Street, Fetter Lane, E.C.

BRICKWORK or POINTING WANTED by competent man. Any quantity, at most reasonable prices.—Apply W. S., Burlington Place, Woodford Wells, Essex.

BUILDER'S CLERK (26) desires re-engagement; shorthand, tracing, and general office routine. Moderate salary.—Box 2651, Builders' Journal Office, 6, Great New Street, Fetter Lane, E.C.

CONTRACTOR'S ASSISTANT with Architectural training desires engagement, or as Clerk of Works. Working drawings, details, quantities. Practical management of large contracts; 11 years' experience.—Box 2631, Builders' Journal Office, 6, Great New Street, Fetter Lane, E.C.

DRAUGHTSMAN. 6 years' experience. Desires evening work. Perspectives, inking-in Architect's drawings, and tracings.—P. R. Walker, 71, Aytoun Road, Brixton, S.W.

EMPLOYERS wanting LABOURERS, Mechanics, Handy Men, &c.—Kindly communicate with the Manager, Church Army Labour Bureau, 130, Edgware Road, W. Telephone 1,056, Paddington. No fees.

FOREMAN of Smiths, Fitters, Erectors, &c., DISENGAGED. Experienced in builder's general ironwork and steel structure. Fair draughtsman. Can estimate, and qualified to manage dept. Excellent testimonials.—G. H., 71, Ockenden Road, London, N.

GENERAL FOREMAN, practical, working, seeks job with Builder. Steady and reliable; competent to carry out all classes of work. Trade, carpenter and joiner.—H. Hems, 7, Park Grove, Bromley, Kent.

MACHINIST (young) wants job. Spindle, own cutters, planing machines, and saw bench, sharp saws. Would go as improver. Town or country. —H. Wynn, 18, Lausanne Road, Peckham, S.E.

MACHINIST, young, wants job. Spindle, any planing machines and saw bench. Make cutters and sharp saws. Town or country.—Machinist, 18, Lausanne Road, Peckham, S.E.

MACHINIST (27) steady, wants JOB; over and under, thicknesser, rise and fall, bench, improver on four-cutter; Piano or Builder's Mill; 8½. Or could take Builder's Yard Foreman's Job. Good knowledge of marerials.—Machinist, 28, Blackhorse Road, Walthamstow.

PAPERHANGER (Practical), day or piece work, fill up time painting. Town or Country.—W. Peters, 477, Woolwich Road, Charlton, S.E.

PLASTERER wants PIECEWORK. Labour only. Town or country. Good references. —T. S., 92, Seaford Road, Tottenham.

PLUMBER (Improver) wants Job, town or country; moderate wages for constant job. Good references.—L. Coe, 4, Lamont Road, Chelsea, S.W.

PLUMBERS' Work, Sanitary, Leadwork, Gas and Hot-water Fitting wanted by practical Plumber. Distance no object; references supplied.—Jefferson, 13, Warrender Road, Islington, N.

SHOP FOREMAN of JOINERS seeks RE-ENGAGEMENT. Large experience in all kinds of joinery, good manager of men and machinery. Good references.—Address H. J. Branson, c/o Mr. G. Hack, 30, Shaftesbury Road, Watford.

SHOP or GENERAL FOREMAN seeks RE-ENGAGEMENT. Just completed several large shops in West End. Thoroughly practical, energetic, and reliable in all best class work. First-class refs. from best London firms.—G. Walker, No. 10, Sunnyside Road, Ealing.

TO BUILDERS AND OTHERS. ARCHITECT (Scotland), prepares working drawings, details, typewritten specifications at lowest charges. Complete set from 30s. Arrange terms.—Box 2653, Builders' Journal Office, 6, Great New Street, Fetter Lane, E.C.

TO BUILDERS and SPECULATORS.—Wanted PIECEWORK. Woodwork, joinery, carcassing, stairs.—Reid, 91, Mill Hill Road, Acton, W.

TO QUANTITY SURVEYORS, WANTED by JUNIOR ASSISTANT, aged 20, Engagement. Quick draughtsman and writer. Can abstract, bill, &c. Is industrious, punctual, and reliable. Moderate salary required.—Apply Box 2616, c/o Builders' Journal Office, 6, Great New Street, Fetter Lane, E.C.

WALKING or WORKING FOREMAN of PAINTERS seeks RE-ENGAGEMENT. Experienced manager. Accustomed to full control. Practical in artistic decorations. Good artist. Present situation 4 years.—State wages, "Foreman," 59a, Marlboro' Road, Bowes Park, N.

WORKING ELECTRICAL ENGINEER, of considerable experience, is open to ADVISE, get out quantities, and carry out any class of electrical work upon the most approved principles.—Boyle, 41, Devonshire Street, Islington.

## Appointments Vacant.

*The charge for Advertisements under this heading is 1s. 6d. per insertion not exceeding four lines, and 6d. per line afterward, prepaid. Three insertions may be had for the price of two. Advertisements must reach the Office not later than 5 o'clock on Monday.*

BOY WANTED for three years' indentures with Architect. Premium, £50, returned as salary. —G. A. T. Middleton, 19, Craven Street, Strand, W.C.

PUPIL, with view to PARTNERSHIP, WANTED by HOT HOUSE Builders. Young energetic draughtsman. Knowledge of Building trades. Founder will train him if necessary, and retire.—Box 2634, Builders' Journal Office, 6, Great New Street, Fetter Lane, E.C.

UNIVERSITY OF LIVERPOOL.

ROSCOE CHAIR OF ART.

The Council invite Applications for the CHAIR of ARCHITECTURE now vacant. The emoluments of the Chair are derived partly from a fixed endowment of £375 a year, partly from a share of students' fees. The election will be for five years, and the Professor will be eligible for re-election; he will not be debarred from engaging in private practice so far as it does not conflict with the duties of the Chair. Applications and testimonials must be forwarded to the Registrar of the University on or before DECEMBER 31.

For fuller details, apply to the Secretary, the University, Liverpool.

WANTED BUILDER'S CLERK (single), to take sole charge of Builder's and Contractor's Office, must be thoroughly reliable in every department and with good references.—Apply to J. L. & H. Steer, Builders and Contractors, Clyst St. George, Topsham, Devon.

WANTED—Thoroughly competent BOOK-KEEPER capable of taking charge of the accounts, and used to the usual routine of a builder's office.—Apply, stating age, experience and salary required to John Morgan & Son, Builders and Contractors, 43, Monk Street, Aberdare.

## THE BUILDERS' JOURNAL.

### PREPAID ADVERTISEMENT FORM.

4 LINES for 1/6.

THREE INSERTIONS for 3/-.

| | | | | | | |
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| | | | | | | |

**After 4 LINES, 6d. per LINE.**

Write your "Want" Advertisement on this form and send it to 6, Great New Street, E.C., with Postal Order for 3/-.

**NOTE.—5 o'clock p.m. Monday is the latest time for receiving "Want" Advertisements. Office: 6, Great New Street, Fetter Lane, E.C.**

# BUILDERS' JOURNAL EMPLOYMENT REGISTER.

We trust this new and original feature will still further add to the usefulness of THE BUILDERS' JOURNAL. It brings together Employer and Employed, to their mutual advantage, thus supplying a long recognised need.

**The Employer.**—In the building trades there must necessarily be "mobility of labour," and when a rush of work comes an employer suddenly finds himself in urgent need of employees. Our scheme is designed to assist him in this respect.

**The Employee** cannot afford to regularly advertise. After the week in which his advertisement appears it is lost for ever. By our new scheme we sustain these advertisements for six weeks.

For 3/- we will give three insertions of any advertisement (four lines) in our "Appointments Wanted" column (*see* page xiv), and also six insertions in the "**Employment Register**" without extra charge.

## THUS FOR 3/- WE WILL ADVERTISE YOU FOR SIX WEEKS.

**Instructions.**—The Employment Register will be classified in trades. All advertisers must furnish their names and full addresses, which will not be published, but a number will be assigned to each for identification. All communications will be treated in the strictest confidence. Employers should address letters to the numbers, and their letters will be immediately forwarded to the advertisers.

The following abbreviations are employed in the Register :—s., salary required ; ex., experience ; refs., references ; yrs., years.

### ARCHITECTS' ASSISTANTS.

26.—Assistant. 6 yrs. ex. Good refs. s. 35s.

43.—Architect's and Surveyor's Assistant. Age 23. Knowledge of all branches. Good refs. Moderate s. North of Eng. preferred.

50.—Architect's and Surveyor's Assistant. Age 22. Ex. 6 yrs. Wkg. drawings, details, and quantities. Mod. s. Good refs.

58.—Architect's Assistant. 7 yrs. varied ex., good refs.

61.—Architectural Assistant. 6 yrs. ex. Mod. s. Excellent refs. Working drawings.

70.—Architect's & Surveyor's Assistant. Age 22. 6 yrs. ex. in all branches. Mod. s. London preferred.

72.—Architect's Assistant. 6 yrs. ex. Details, contract drawings, surveying, and quantities.

73.—Architect's Assistant, with own office, can assist others in working drawings, details, and perspectives.

76.—Architect's Assistant, can assist in preparation of drawings&perspectives.

78.—Architect's Assistant. Good refs., desires situation as improver; neat draughtsman.

81.—Architect's Assistant desires engagement in Midlands. Mod. s. Good genl. experience.

83.—Architect's Assistant, age 22½, mod. s., good draughtsman, general ex.

### BRICKLAYER.

66.—Bricklayer. Brickwork or pointing wanted by experienced man.

### CARPENTERS & JOINERS.

48.—Carpenter and Joiner's Improver. Age 21. Ex. 5½ years. Good refs.

67.—Carpenter. Piecework. Woodwork, joinery, &c., wanted.

### CLERK.

49.—Builder's Clerk. Age 25. Ex. 9 yrs. of every branch. Good draughtsman.

82.—Builder's or Builders' Merchant's Clerk, age 31, married, ex. refs., mod. s., good general experience.

### CLERK OF WORKS.

37.—Clerk of Works. 46. Abstainer. Excellent refs.

### CONTRACTOR'S ASSISTANT.

74.—Contractor's Assistant. 11 yrs. ex. and architectural training. Working drawings, details, quantities. Situation as clerk of wks. wtd.

### DESIGNERS, TRACINGS, &c.

28.—Tracer. 7 yrs. ex. Moderate s. Desires evening work.

47.—Architect's Draughtsman in good situation in France, wants situation in London, wide ex., excellent refs.

56.—Designs. Stained Glass, Mosaic, and Mural decoration prepared.

79.—Architectural Draughtsman. Age 22. 4 yrs. ex. Improver desires engagement.

80.—Architectural Designer, 1st class detailist, disengaged shortly.

84.—Architectural Draughtsman, 6 yrs. ex., desires evening work.

*(Continued on next page.)*

**Interesting to every Builder.**
POLING BOARDS, selected lengths and thicknesses (best quality and full measure).
Also Scaffold Boards, Putlogs, Scantlings, Deals, Battens, and Boards. Lowest wharf prices.
C. H. GLOVER & Co., Ltd., Importers, Hatcham Saw Mills, Old Kent Road, S.E.

**BLUE and FERRO-GALLIC PRINTS**
White line on blue ground, and dark line on white ground.
**W. F. STANLEY & Co., Limited,**
13, Railway Approach, London Bridge, S.E.
NEW REVISED PRICE LIST POST FREE.
All Prints by Electric Light, no extra charge.
Tel. Ad.: "TRIBRACH—LONDON." Tel. No. 871 Hop.

**LONDON PLATE-GLASS INSURANCE CO., LTD.**
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Ten per cent. of the Premiums returned every six years in cases where no claim has arisen.
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LIBERAL TERMS FOR BUSINESS INTRODUCED.

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This Journal, established in 1872, furnishes List of
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FORTHCOMING WORKS,
SITUATIONS VACANT,
Under Public Bodies, and gives all information concerning Local Self-Government.
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*For Mullions, Sills, Heads, Quoins, Jambs, Fenders, &c.*
Buttermere Green Slate and Stone Works,
KESWICK.

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Manufacturers of
**Best Red Pressed and Sand Stock Facing Bricks, &c., also of Mountsorrel Concrete Paving Flags, Window Heads, Cills, &c.**
SLATE MERCHANTS.
Stocks of VELINHELI and BANGOR on hand.

**Pilkington's Tiles**
WORKS:
Clifton Junction, near Manchester.
Manufacturers of
**TILES, FAIENCE & MOSAIC.**
London Show Rooms: 37 & 38, Shoe Lane, E.C.
Manchester Show Rooms: 37, Cross Street.
Glasgow Show Rooms: 96, Renfield Street.

**YORKSHIRE STONE.**
Any kind supplied in the rough, sawn, or dressed ready for fixing.
WM. KNOWLES, Cullingworth, nr. BRADFORD.

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**BIRKBECK BANK,**
Southampton Buildings, Chancery Lane, London.
2½ % DEPOSIT ACCOUNTS repayable on demand. 2½ %
The BIRKBECK ALMANACK, with full particulars, post free.
C. A. RAVENSCROFT, *Managing Director.*

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From Midland and North Country Quarries, write
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Quarry Owners and Stone Merchants,
NOTTINGHAM.

Established 40 Years.
CONTRACTOR TO HIS MAJESTY'S GOVERNMENT, &c.
Telegrams: "SANDBAGS, LONDON." Telephone: 334, KING'S CROSS.
**JOSEPH ARNOLD,** Silver & Building Sand Pits Owner & Contractor,
32, ST. PAUL'S RD., CAMDEN TOWN, LONDON, N.W.
*(Where all communications must be sent.)*
SAND PITS, Grovebury, Shenley Hill and Heath, Nearly 200 Acres, and at Flitwick.
Peat and Loam Grounds, Stock Grove, Heath and Reach, Leighton Buzzard, 1,800 Acres extent.
Special Sands for all Trades. Builders' Merchants and Trade Supplied Direct by Boat or Rail. Lowest Rates to all parts. Prices on application as above.
Special Sand for Water and Sewage Filtration and Cement Work, as supplied to the London and Provincial Water Companies, Corporations, District Councils, &c.

**BRICKS. RED BRICK.**
A large Stock of best Red Facings, Light, Medium, and Dark. Red Sand Faced. Also Stock of 100 Patterns Moulded Goods of all descriptions, including CHIMNEY POTS, RIDGE TILES, FLOOR TILES. Architects' own Designs to Order on shortest notice.
*The South Lincolnshire Brick and Tile Co., Ltd., Bourne, Lincs.*

### TENDERS—*cont. from* p. xv.

**London.**—For improvement of boys' and girls' school, Flint Street School, Walworth, for the London School Board. Mr. T. J. Bailey, Board's architect: –

| | |
|---|---|
| J. Carmichael | £14,936 |
| J. Greenwood, Ltd. | 14,808 |
| Holliday & Greenwood, Ltd. | 14,808 |
| Patman & Fotheringham, Ltd. | 14,113 |
| J. Smith & Sons, Ltd | 13,989 |
| Johnson & Co. | 13,170 |
| F. & H. F. Higgs | 13,045 |
| J. Marsland & Sons | 13,010 |
| Lathey Brothers | 12,991 |
| J. Garrett & Son | 12,695 |
| W. Downs | 12,680 |
| J. & C. Bowyer | 12,473 |
| E. Triggs | 11,985 |
| J. Appleby & Sons* | 11,770 |

* Recommended for acceptance.

**London.**–For the erection of a new school, Stillness Road, Brockley, for the London School Board. Mr. T. J. Bailey, architect :—

| | |
|---|---|
| J. Garrett & Son | £26,090 |
| Martin, Wells & Co., Ltd. | 25,435 |
| J. Longley & Co. | 24,258 |
| G. E. Wallis & Sons | 23,773 |
| C. Dearing & Son | 23,722 |
| Holliday & Greenwood, Ltd. | 23,689 |
| Lathey Brothers | 23,642 |
| J. Greenwood, Ltd. | 23,627 |
| J. & H. F. Higgs | 23.540 |
| J. Marsland & Sons | 23,465 |
| W. Downs | 23,107 |
| E. Lawrance & Sons | 23,096 |
| J. & C. Bowyer | £22,963 |
| Johnson & Co. | 22,736 |
| J. Smith & Sons, Ltd. | 22,695 |
| J. & M. Patrick* | 22,268 |

* Recommended for acceptance.

**London, S.E.**—For the construction on a site at the junction of Blackwall Lane with Woolwich Road of an underground convenience for both sexes, for the Greenwich Borough Council :—

| | | |
|---|---|---|
| G. Jennings, Ltd., Lambeth | £3,050 | 0 |
| Doulton & Co., Lambeth | 2,790 | 0 |
| J. F. Oultram, Greenwich | 2,650 | 0 |
| F. J. Gorham, Greenwich | 2,640 | 7 |
| W. Mills, Westcombe Park | 2,619 | 0 |
| Davis & Bennett, Westminster | 2,297 | 0 |
| B. E. Nightingale, London | 2,226 | 0 |
| B. Finch & Co., Lambeth | 2,076 | 0 |

**London, W.**—For alterations and additions to the Ealing telephone exchange, for H.M. Office of Works, &c. :—

| | | | | A. |
|---|---|---|---|---|
| Richardson Brothers | £3,422 | 0 | 0 | — |
| J. Edwards & Son | 3,340 | 0 | 0 | — |
| C. Ansell | 3,050 | 0 | 0 | £20 |
| C. Dearing & Son | 2,948 | 2 | 1 | — |
| B. E. Nightingale | 2,939 | 0 | 0 | — |
| Speechley & Smith | 2,911 | 0 | 0 | 20 |
| Wisdom Brothers | 2,900 | 0 | 0 | 15 |
| E. Hadley & Sons | 2.878 | 14 | 0 | 5 |
| J. Ferguson & Co. | 2,870 | 0 | 0 | — |
| J. Dorey & Co., Ltd. | 2,770 | 0 | 0 | — |
| General Builders, Ltd. | 2,727 | 0 | 0 | 7 |

A –Credit old materials.

**Pontypool.**—For the erection of a wall for the Presbyterian Church of Wales. Messrs. Habershon, Fawckner & Co., architects, 41, High Street, Newport, Mon. Quantities by the architects :—

| | |
|---|---|
| J. Morgan | £3,811 |
| Jewell & Sons | 3,589 |
| Morgan & Co. | 3,360 |
| C. Shopland | 3,187 |
| Bailey Brothers | 3,110 |
| Morgan & Evans,* Pontnewynydd | 2,997 |

* Accepted.

**Portsmouth.** For the erection of a new school of three departments (boys, girls and infants) in place of the present Milton School building (mixed and infants), for the Portsmouth Education Committee. Messrs. Rake & Cogswell, architects, Prudential Buildings, Landport : —

| | |
|---|---|
| Cook & Son, Crawley, Sussex | £21,995 |
| Smith & Sons, South Norwood | 21,662 |
| Stephens & Bastow, Montpelier, Bristol | 20,978 |
| Haslemere Builders, Haslemere | 19,682 |
| W. Evans, Southsea | 19,600 |
| F. Privett, Southsea | 19,432 |
| G. J. Davis, Southsea | 19,307 |
| Sweetland, Southsea | 19,065 |
| Clark & Sons, Landport | 18,940 |
| Coltherup, Portsmouth | 18,825 |
| Perkins & Durant, Fratton | 18,793 |
| Salter, Southsea | 18,764 |
| F. Corke, Southsea | 18,760 |
| J. Crockerell,* Victoria Road, North Southsea | 18,436 |

* Accepted.

## BUILDERS' JOURNAL EMPLOYMENT REGISTER—*(Continued).*

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27.—GENERAL FOREMAN. Age 50. Many yrs. ex. Thoroughly practical. Trade, carpenter. Town or country.
35.—WORKING FOREMAN BRICKLAYER. Age 39. Good refs.
36.—BUILDER'S GENERAL FOREMAN. 36. Abstainer. Trade, carpenter & joiner.
45.—SHOP OR GENERAL FOREMAN. First class refs.
54.—GENERAL FOREMAN. Steady and competent. Trade, carpenter and joiner.
57.—BUILDER'S GENERAL FOREMAN. Age 52. 20 years' ex. with West-End firm. Thoroughly practical.
62.—WORKING PAINTER'S FOREMAN. Wide ex. of artistic decorations. Last sit. 4 yrs.
71.—SHOP FOREMAN. Age 44. Good refs. 15 yrs. ex. in good West End shop.
77.—FOREMAN OF SMITHS, FITTERS, &c. Excellent refs. Draughtsman and estimator, ironwork and steel structure.
85.—SHOP FOREMAN OF JOINERS. Good genl. experience, good refs.

### LABOURERS.

75.—LABOURERS. Mechanics' handy men. Good reliable experienced men; any number at liberty.

### MACHINISTS.

34.—MACHINIST OR SAWYER. Experienced hand. Age 31. Moderate s. Understands gas engine.
55.—MACHINIST. Young energetic man, ex. in all branches, seeks work as an improver.
94.—MACHINIST (27), good general experience, knowledge of all branches.

### MISCELLANEOUS.

91.—ART MASTER. 7½ yrs. ex., good draughtsman, special ex. in architecture and design, exc. refs., mod. s. to commence, berth reqd. in architect's office.
92.—ELECTRICAL ENGINEER can undertake class of electrical work.
93.—ARCHITECT prepares wkg. drawings, details, specifications, low terms.

### PAPERHANGER.

59.—PAPERHANGER requires day or piecework. Town or country. Can do painting also.

### PLASTERER.

42.—PLASTERER. Good refs. Wants piecework. Town or country.

### PLUMBERS & FITTERS.

63.—PLUMBER. Improver. Mod. s. Wants constant job. Town or country.
68.—PLUMBER. Good refs. All branches.

### SURVEYORS' ASSISTANTS.

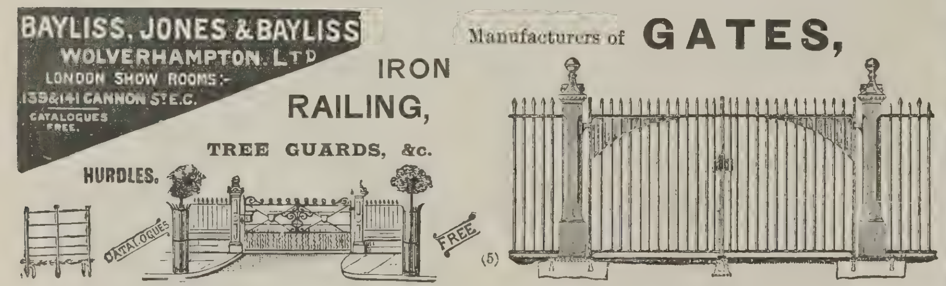
53.—SURVEYOR'S ASSISTANT. Ex. in all branches. Mod. s.
60.—JUNIOR. Aged 20. Quick draughtsman, writer. Can abstract, bill, &c. Moderate s.

### TIMEKEEPER.

64.—TIMEKEEPER. Tall. Excellent refs. Educated. Would accept job as Watchman or Messenger.

### TOO LATE FOR CLASSIFICATION.

86.—BUILDER'S CLERK. Shorthand, tracing, office routine, mod. s.
87.—ARCHITECT'S ASSISTANT (24), varied ex. and good general knowledge. London preferred.
88.—ARCHITECT'S ASSISTANT. 5 yrs. varied ex., draughtsman, knowledge of surveying, exceptional refs., mod. s., abstainer.
89.—ARCHITECT'S ASSISTANT (29), ten yrs. good general ex., draughtsman and colourist, good refs., mod. s.
90.—ARCHITECT'S JUNIOR ASSISTANT. 5 yrs. ex., good refs , mod. s.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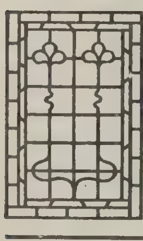
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THE

# BUILDERS' JOURNAL

AND ARCHITECTURAL RECORD.

November 18, 1903. Vol. 18, No. 458. 6, Great New Street. Fetter Lane, E.C.

## Summary.

At a meeting held last week under the auspices of the Edinburgh Citizens' and Ratepayers' Union a resolution was passed strongly disapproving of the proposal of the Town Council to entrust the preparation of plans for the Usher Hall to the City Architect (Mr. R. Morham), and urging that competitive designs should be invited. Sir Colin Macrae presided, and Prof. Baldwin Brown supported the resolution. (Page 208.)

The restoration of Kirkwall Cathedral is contemplated. (Page 212.)

The main fabric of the Liverpool Cathedral, including the choir and transepts, is to be built first, at a cost of £240,000. (Page 216.)

In a case which came before them last week, the Court of Appeal held that a channel in the road to carry off surface water and water from the roofs of certain houses was a "sewer" within the meaning of section 4 of the Public Health Act, 1875. (Page 210.)

No further steps have been taken to create a Chair of Architecture at the Yorkshire College, Leeds. (Page 211.)

In a paper on tensile tests of mild steel read before the Institution of Civil Engineers last week, Professor Unwin gave the following equation for the percentage of elongation: —

$$e\,\% = \frac{c\mathrm{A}\sqrt{\ }}{l} + b$$

for bars of gauge-length $l$ and cross-section A, the first term on the right being the local extension and the second the general extension, $c$ and $b$ being constants. (Page 210.)

Deacon-Convener Goldie stated before the annual meeting of the Building Trades' Exchange, Ltd., that there had never been anything in Glasgow approaching the briskness and volume of the building trade during the last ten years. (Page 218.)

The Government of India recommends that photographs should be taken whenever repairs to any ancient buildings are undertaken—more especially where scaffolding is erected. (Page 212.)

In concluding his series of lectures at Owens College, Manchester, on the work of the monastic orders in relation to architecture, Professor Capper said that the French cathedrals were built rather in defiance of or in rivalry with the abbeys, whereas in England the one merged into the other. He did not think, however, the English cathedrals could compare with the French in unity of design. Benedictine abbeys were preserved, while Cistercian abbeys were not, because they were built in cities, in commanding situations, and entered into the life of the people, while those of the Cistercians did not. (Page 211.)

M. Homolle read a paper before the R.I.B.A. on Monday describing the wonderful excavations carried out by the French Government at Delphi. (Page 213.)

**Sawing at Damascus.** WITH the Elgin marbles in our own museum we can hardly protest as unrestrainedly as we might against an act of vandalism to which Canon Tristram draws attention. It appears that thirty years ago he discovered a gorgeous but unfinished palace in solitary majesty on the plain between Damascus and Mecca. Such a fragment hidden away in a foreign land might seem to be of little consequence, but Ferguson showed it belonged to the seventh century, and was the only remaining example known of Byzantine-Sassanian architecture. Its most remarkable feature was a south façade having figures of men and animals and innumerable fruits and flowers delicately sculptured in the hard limestone. This marvellous work, which has remained for 1,300 years, and of which not a chip was missing when Canon Tristram first saw it, has now been given by the Sultan to the German Emperor, and under the auspices of German savants the figures of the façade have been sawn off and conveyed to Haifa for transport to Berlin. "Thus the solitary relic of a great historical era is mutilated, while in Berlin Museum the detached fragments can be nothing more than mere curiosities." The process calls to mind all that sawing of Gothic heads which went on at St. Mary's, Oxford, under the eye of an architect, R.A.

**All Hallows, Lombard Street.** FOR the moment the church of All Hallows has been saved. The four parishes of All Hallows; St. Benet, Gracechurch Street; St. Leonard, Eastcheap; and St. Dionis Backchurch united in the one remaining church, All Hallows, have rejected the Special Commissioners' proposal, endorsed by the Bishop of London, for the sale of the church and the union of the four parishes to that of St. Edmund the King, to which the parish of St. Nicholas Acon is already affiliated. But lovers of Wren's work must not assume that there is nothing further to fear. The rancour which has been exhibited towards these City churches, and the unconcealed delight which many persons have manifested when the demolition of any one of them has been proposed, while hard to explain, makes it too much to hope that the respite is more than temporary. The Bishop of London in a special piece of pleading for the sale of the church stated that 40,000 people came annually into the diocese for whom there was no church and no minister. One might question what proportion of these 40,000 are or have any intention of becoming members of the Anglican community. We would ask, does the Bishop believe that the London diocese of to-day is unable to provide for these wants without selling the church's most beautiful works of art? The waste and mismanagement of the church's property is a crying scandal, and it is high time that the laymen pressed for the appointment of a committee of business men to examine into the question of the church's means and the methods of applying them Truly it is a pitiable contrast: the wretched calamity-stricken churchmen of 1666 setting to work to rebuild fifty churches destroyed in the Great Fire; and the churchmen of to-day, infinitely richer, more numerous and more influential, setting to work to destroy one by one the beautiful fanes raised out of the bankrupt purse of their stricken forefathers, with the approbation, encouragement and direction of their bishop. Art is long and sacrilege is easy.

**A Civic Question.** A PAINTER of animals so distinguished as Mr. Briton Riviere is an eminently fit advocate for the retention of the horse in our streets: but, while appreciating his motives, we are only sorry that we quite fail to agree with his advocacy, as set forth in large type in the "Times." The coming of the traction engine, with ponderous trucks of bricks, and the clatter of the trade and municipal motor-van, have prompted Mr. Riviere to claim indulgence for the horse. We admit that the machines in question are exasperatingly noisy, that there is much wear and tear of the roads with them, and that—taking the Strand motor dust-van as an example—they are of hideous design. Yet, admitting all these present evils, we must reply to Mr. Riviere that they have every right to be in the streets of London. That the horse is to be banished from cities is certain; and we welcome the change which has already begun. It may mean, as Mr. Riviere says, the banishment of the most beautiful form of traction in the world, and the loss of a touch of nature that brings the country into the town, but it will also mean cleaner streets, a far longer life to roadways, a vast difference in the length of traffic, and considerably less expenditure by the municipal authorities on the upkeep of their streets. And in this matter let it not be thought that we are always going to bear with the crude, noisy, ugly contrivances which are now called motor-vans: let us remember that, as in every other branch of engineering, they will be developed towards a perfection that will make them far fitter to be in a city than that beautiful creature, the horse.

## THE USHER HALL, EDINBURGH.

### Protest against Town Council's Decision.

UNDER the auspices of the Edinburgh Citizens' and Ratepayers' Union, a public meeting of citizens "who consider that competitive plans should be invited for the construction of the Usher Hall" was held last week in Edinburgh. About 120 persons were present. Sir Colin G. Macrae, who presided, said he would be the very last man to say one word in disparagement of the City Architect (Mr. R. Morham). He had no doubt that the City Architect discharged his duties with efficiency and ability, and certainly to the satisfaction of his employers. If it had been a case of erecting a police-station or a fire station, or some work within the natural administration of the Town Council, there could have been no question raised, but when it came to the matter of the Usher Hall they got on exceptional ground. In the first place, there was a very large sum of money to be expended, the site was one which was conspicuous from Princes Street, and it was of the utmost importance that the building erected on that site should be one that would adorn and beautify and not discredit the city. It was a most important matter, if they wished to encourage the talent and genius of a country, that public works should not be confined to officials. He quoted what happened in the case of the Scott Monument, which was the work of an obscure and little known architect, who was successful out of fifty-four competitors. The Town Council, he thought, would do well to reconsider the resolution they had come to, and possibly to withdraw it.

Mr. Will. C. Smith, K.C., moved—

> That this meeting of citizens strongly disapproves of the proposal of the Town Council to entrust the preparation of the plans for the Usher Hall to the City Architect, and urges that competitive plans be invited therefor; and that an independent assessor of undoubted standing be appointed to adjudicate upon them.

Prof. Baldwin Brown, who seconded the resolution, said that as a matter of fact competitions for designs had recently led to no very satisfactory results, but that was because the honourable understanding upon which these competitions were based and intended to be carried on had not been fully observed. The game had not been played according to the rules. It was not a perfect system, and a committee of the Institute of British Architects was considering whether it could be improved; but he did not know any other system which gave a young and untried architect his chance. The site was in a magnificent situation, but it was obvious that it did not offer an opportunity such as it would if the building were on the open Meadows. At any rate there was a façade to Castle Terrace, in full view of a considerable part of Princes Street. If it were only that, he would feel pretty confident in handing over the work to the excellent architects in the office of the Works Department of the city, because in these matters they had a tradition in Edinburgh. He did not think any architect could go very far wrong if he followed the Edinburgh tradition in monumental façade, but they had to consider the interior, where questions of colour, wall painting and decoration, and material had to be considered. The public taste and artists' opportunities had very much advanced. They wanted an architect of genius who would set the fashion for the future, who would show what it was possible to do in an interior with the use of the comparatively new material which was now available. With all possible respect to the Works Department, he should not like to say that there was there either genius or originality. He did not think genius and originality were in their place in the Town Council or in any department of it. As a matter of principle they should express the opinion that in a matter of that kind, which lay entirely outside the routine work of the Town Council, the members of the architectural profession generally should have their chance of showing what they were capable of doing.

The resolution was unanimously adopted.

## SURVEYORS' INSTITUTION.

### The President on Village Houses.

IN the course of his presidential address to the Surveyors' Institution on November 9th, Mr. Albert Buck referred to the housing question. After stating that the London County Council had spent on capital account, under the Housing of the Working Classes Acts, no less a sum than £3,555,480, he asked whether our country villages contained no miserable insanitary cottages, the property not of well-to-do landlords but of small owners, who had neither the means nor the inclination to improve them. If this were so (and he had every reason to believe it was), what were our county councils doing that they took no action of the kind taken by our large town corporations? "Surely here is a direction in which something could be done to improve the lot of the agricultural labourer, and thus help to keep upon the land those that still remain. On the estates of private owners, the cottages have, with few exceptions, been greatly improved in recent years. But the fact is, the labourer does not love these isolated estate cottages. He wants, like others, to associate with his kind, and if he finds some attraction in village society, who shall blame him? . . . .

"We are doing our best in Worcestershire to give effect to the provisions of the Small Holdings Act. The county council purchased a property of about 146 acres at a price of about £33 per acre, including timber. The land was very suitable, and a scheme was prepared dividing the land into thirty-two small holdings. There was no trouble in getting applicants: the difficulty was to select suitable men.

"About half of them paid down one-fifth of the purchase money before completion, while the remainder had to be given time which extended over about three years. The result is that men pay, on a 4 per cent. basis, rather more than the ordinary rent of the land, but this payment is sufficient in forty years to repay the county council the whole of the money advanced, and is worked out to leave a very fair profit. The county council pay all expenses of registration, and their solicitor acts without charge for the men, if they desire it. A building scheme has also been arranged under which a small holder can obtain an advance to enable him to build. The council pay three-fourths of the contract price, leaving the small holder to find the remaining one-fourth and pay the architect's fees. The money is advanced from time to time on the county surveyor's certificate. Houses consisting of a good kitchen, living-room, with back kitchen and larder, and three good bedrooms have been erected, with the necessary outbuildings, including stable, tool-house, copper for boiling pig-food, and generally two pigstyes; and the contract price has usually been about £350. All repairs are done by the county council, and the county insure the property, thus protecting their own interests."

### National Roads.

Referring to the report and evidence of the departmental committee on highway authorities and administration, appointed by the Local Government Board, Mr. Buck said the total mileage of main roads in this country (exclusive of those comprised in the county boroughs) was 26,598 miles, of which there were 3,819 miles in urban districts, and consequently under sole control of urban authorities, and 22,779 miles in rural districts under the control of rural district councils: as a consequence, there was no uniformity of administration and no probability of conjoint action. The great North Road from London to Edinburgh was divided for administrative purposes among seventy-two authorities who, on no possible assumption, would be likely to co-operate for the purpose of widening or improving that great artery of traffic. This was only one instance. He thought the committee were right in their suggestion that the great highways should be removed from the control of the present subordinate authorities and placed under the jurisdiction of county highway boards, and that certain highways which were of more than county importance should be declared to be "national" roads maintainable out of Imperial funds.

### Colonial Members: The Chartered Surveyor.

In concluding, Mr. Buck said that their Institution would soon number 4,000, and there were abundant signs of a considerable influx of members from the colonies. The council were considering the desirability of holding branch examinations in South Africa for building and quantity surveyors, many of whom had expressed a wish to be connected with the Institution.

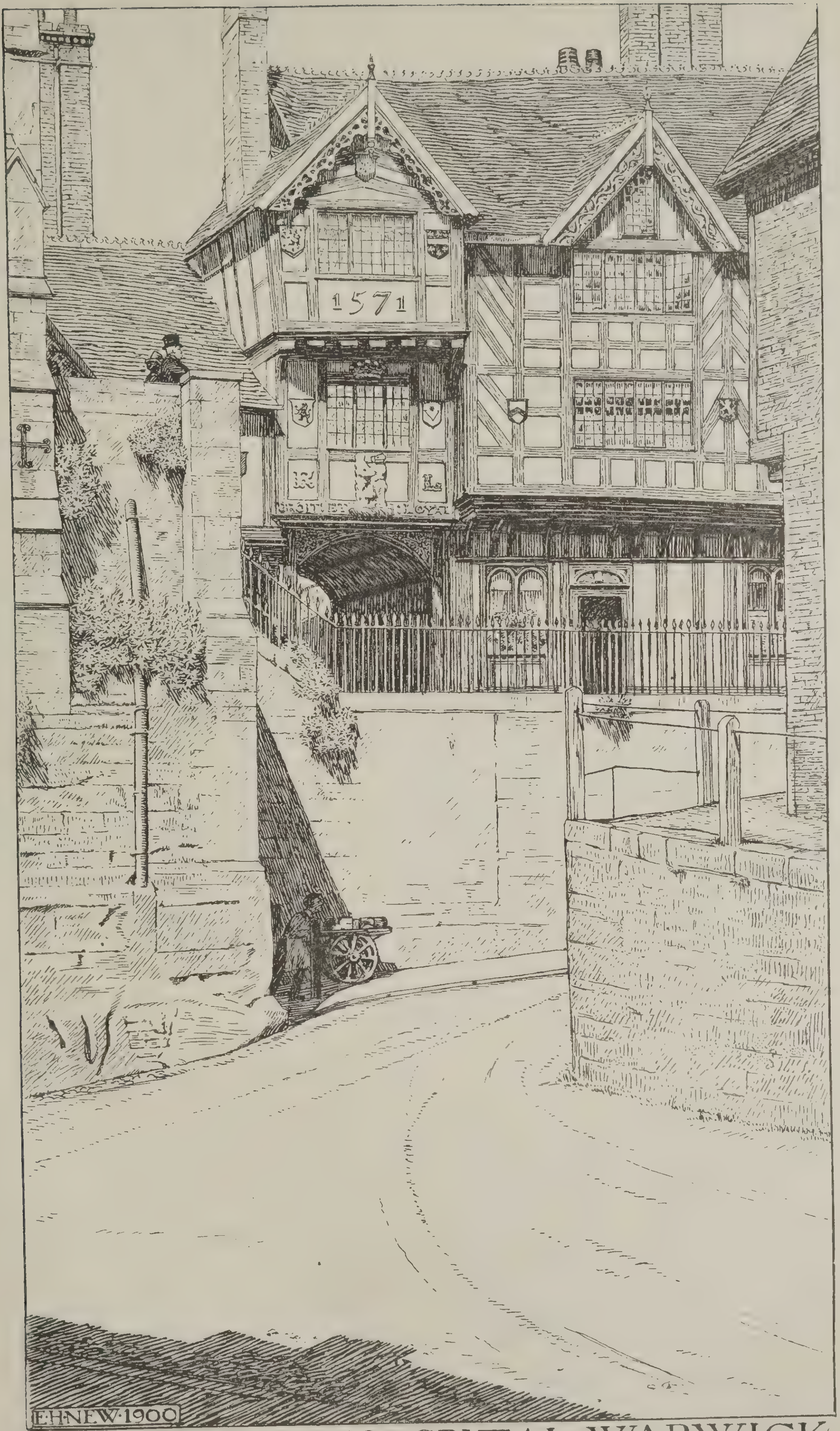
They had lately introduced modifications in their by-laws, some of which were aimed at unworthy practices, happily limited to a few, but from which any self-respecting profession needed to purge itself. The introduction of an alternative title was a measure of protection against those who arrogated to themselves professional descriptions which did not belong to them. Whether the new title of "chartered surveyor" would or would not commend itself to the majority of the members remained to be seen, but he felt certain that no one who had once adopted it would willingly divest himself of it again.

## DRAWINGS OF ARCHITECTURE.

CONTINUING the series begun last week, we now publish a drawing by Mr. E. H. New and one by Mr. George C. Haité.

Mr. New is the best-known representative of the "Birmingham School" and the drawing of Leicester's Hospital, Warwick, reproduced on the opposite page, is a thoroughly characteristic example of his work. It will be noted that the draughtsmanship exhibits extreme care, the dominating lines of the building being emphasized and the subsidiary lines omitted; the whole effect being considerably decorative. That such treatment is liable to become harsh need scarcely be pointed out, the very severity of its lines tending to rob the subject of what softness it possesses; but in this drawing the defect is not apparent and there is a fine difference rendered between the texture of the timber and plaster of the building and the stone walls around it. The rut marks in the foreground, seemingly so unimportant, are, in reality, essential to the composition, as they serve to emphasize the distance across this narrow little street in Warwick.

As an absolute contrast both in treatment and subject we may turn to Mr. Haité's pencil sketch, reproduced on p. 211. Here everything is suggested rather than actually depicted—the brick rings over the archway, the plaster eaten away by time and traffic, the fruit stall and the broken street surface. Mr. Haité calls it "The Siesta." It is an extremely bold and clever piece of work, and gives that intense effect of sunlight experienced under the sky of Spain.



LEICESTER'S HOSPITAL · WARWICK

# TENSILE TESTS OF STEEL BARS.

### Professor Unwin's Latest Experiments.

AT last week's meeting of the Institution of Civil Engineers a paper on "Tensile Tests of Mild Steel, and the Relation of Elongation to the Size of the Test-bar," was read by Prof. W. C. Unwin, B.Sc., F.R.S., M.Inst.C.E. He stated that in the case of steel the engineer relied on tests of samples for assurance that he was obtaining suitable material. It was important, therefore, that the information given by tests should be definite and comparable. Mechanical tests were the most important for the engineer, but as usually conducted they were not wholly satisfactory, and had to be supplemented. Prof. Unwin's object was to consider some conditions which affected the results of tests, especially as regarded the measurement of ductility. Ductility was probably the most important quality in the material for working purposes.

Some conditions were then discussed. The time-effect was only negligible provided inertia-forces might be neglected. The method of gripping the test-bar and the form of fracture as affecting the results were discussed, and the influence of enlarged ends on the elongation. The effect of the position of fracture between the gauge-points was examined, and some numerical results were given. Next, the effect of small variations of cross-section, which was greater than was ordinarily supposed, was shown.

The total elongation was shown to consist of a general stretch, nearly uniform along the bar, and a local stretch. As geometrically similar bars deformed similarly, the percentage of ultimate elongation was the same in similar bars of the same material. The law of percentage of elongation in geometrically dissimilar bars was then examined, and it was shown that for bars of any given material, of gauge-length $l$ and cross-section $A$, the percentage of elongation was given by the equation

$$e\,\% = \frac{c\sqrt{A}}{l} + b$$

where the first term on the right was the local and the second the general extension, $c$ and $b$ being constants. This equation was first verified by application to some results obtained by Mr. Barba on bars of varying gauge-length, cross-section and form of cross-section. The proportion of local to general extension in certain cases was determined.

An account was then given of a series of tests on ship- and boiler-plates of different thicknesses, made for the Engineering Standards Committee. The results were first discussed by using plotted curves without assuming the elongation equation. Taking from the curves the elongations for bars of a standard form, the relative ductility of these bars was found. This was compared with the elongations for bars of constant width such as were generally used in testing. It was shown that the elongations in the latter case were very misleading as to the relative ductility. In the case of similar bars the ductility decreased as the thickness of the plates increased. But the results on bars of constant width would lead to the conclusion that the thickest plates were the most ductile.

The constants in the elongation equation were then given for the bars in each of six series of tests and for plates of ¼in. to 1¼in. thick, with a detailed comparison of the elongations calculated by the equation and observed in the tests.

A further series of tests on plates with varying percentages of carbon was given. The constants $c$ and $b$ in the elongation equations decreased as the percentage of carbon increased.

Lastly, a series of tests was made by Mr. F. C. Fairholme, of the Cyclops Steel Works, on short test-bars cut from tyres and axles. It was shown that the elongation equation was applicable to these short test-bars. The forms of short test-bars which could be used in such cases was discussed, and a very simple recommendation was made which would secure that in all such tests the elongations would be comparable.

The question of quality figures for materials was then examined. It was pointed out that if quality figures were to be of value the tests must be made on similar test-bars, or the results must be reduced to equivalent results on similar bars. The values were examined of the quality figure for the whole of the tests described in the paper for test-bars of different areas of section.

# MR. McKIM'S ADDRESS.

### Relations between American and English Architects.

IN the course of his presidential address to the American Institute of Architects, Mr. C. F. McKim said :—

Remembering the dispatch of "sympathy" sent us on the day of President McKinley's death by the President of the Royal Institute of British Architects, the receipt at this moment of our Convention of a message from the same source attests the increasing and cordial interest with which the problems surrounding our advancement are regarded in England.

At this unsettled stage of our professional relations with our own Government, it is especially gratifying to feel that the older professional body of the Mother Country, whose relations with their Government are already well established, are not indifferent to the interest of their younger colleagues on this side of the water. In answer to the questions now pending between Congress and our profession, so vital to the welfare of both, President Webb's message brings timely encouragement to our committees on Government architecture and on the improvement of Washington, but we cannot fail to appreciate still more strongly the spirit which prompted him to send it. He cables :—

"War Office, Public Offices, Museum, College of Science, five per cent. on estimated cost. Washington Commission Park improvement plans as fine as anything could be."

Indeed, if I may be permitted to digress for a moment, the intelligent interest in the details of the Park Commission Scheme shown not only by London men, but by members of the allied societies elsewhere, is more general and outspoken than some of us realize.

Your Commission has received during the present year many letters and expressions attesting this feeling. In the great project of the Victoria Memorial, for instance, connecting the Strand at Trafalgar Square with Buckingham Palace, the creation of the president of the Royal Institute, Mr. Webb was from the first interested in the Washington plan, and especially in those of its features which reflected the influence of Le Notre. His warm endorsement was shared by leading men in and out of the profession, and should mean much to those who may hereafter be charged with the responsibility of deciding the fate of the plan approved by President Washington. The voluntary withdrawal of the Pennsylvania Railroad from the Mall—an act of public spirit and appreciation of the original purposes and aims to which this great central artery was devoted by the father of his country—must henceforth render impossible encroachment upon a space reserved for the public use and essential to the development of one of the noblest avenues ever laid out in any country.

# Law Cases.

**Road Channels as "Sewers": Appeal Case.**—The case of *Wilkinson* v. *The Llandaff and Dinas Powis Rural District Council* was recently taken to the Court of Appeal. The main question was whether a channel at the side of a road in Dinas Powis was a "sewer" within the definition contained in section 4 of the Public Health Act, 1875. If it were, the defendants were bound to cleanse it. The channel was an open one, carrying off surface water from the road, and in it were gratings or gulleys to carry the water into a deeper underground drain. The channel also carried off water from the roofs of some of the houses at the side of the road and from the curtilages of those houses by means of pipes connected with the channel. Some sewage matter had found its way into the channel, but not through any fault of the plaintiff, who occupied one of the houses; it came from another house. Section 4 of the Act provides that: "'Drain' means any drain of and used for the drainage of one building only, or premises within the same curtilage, and made merely for the purpose of communicating therefrom with a cesspool or other like receptacle for drainage, or with a sewer into which the drainage of two or more buildings or premises occupied by different persons is conveyed. 'Sewer' includes sewers and drains of every description, except drains to which the word 'drain' interpreted as aforesaid applies, and except drains vested in or under the control of any authority having the management of roads and not being a local authority under this Act." By section 19.—"Every local authority shall cause the sewers belonging to them to be constructed, covered, ventilated and kept so as not to be a nuisance or injurious to health, and to be properly cleansed and emptied." Mr. Justice Phillimore held that the channel was a "sewer" within section 4, and that it was the duty of the defendants to cleanse it. He granted an injunction and gave the plaintiff £30 damages. The defendants appealed. The Court dismissed the appeal.—Lord Justice Vaughan Williams said that this channel, if it did in fact constitute a "drain," was not within the definition of a "drain" in section 4. Then the definition of "sewer" included "drains of every description," except certain specified drains, one of which was a "drain" as previously defined. It was quite plain that this channel was a drain of some sort, and it was not within the exceptions in the definition of "sewer." That being so, the only remaining question was whether this portion of the highway over which the surface water ran was within the words "drains of every description" in the definition of "sewer" in section 4. It was contended that it was not, because it was difficult to define its lateral extension—that there was no edge separating it from the highway. In his Lordship's opinion, this did not make any difference. The Court must have regard to the purpose for which the channel was made. It was made for the purpose of draining the water from the surface of the road, that the water might be held in a confined space until it reached the grating which was to carry it away. Under the circumstances it appeared to his Lordship plain that the channel came within the words "drains of every description." His Lordship only decided that in the present case the learned judge was right in holding that this channel was a "sewer" which the local authority were bound to keep in proper order. He did not decide that an agricultural drain carrying off water from several separate premises would necessarily be a "sewer" which the local authority were bound to keep in order. It was said that it had been decided that a drain might be a "sewer" for some purposes and not for others. If that was the effect of the decision in *Kinson Pottery Co.* v. *Poole Corporation* (1899, 2 Q.B., 41), his Lordship could not agree with it. But, if the judgments there were carefully read, he did not think it decided anything of the sort. Nor was it necessary for that decision to do so.—Lord Justice Romer and Lord Justice Stirling delivered judgment to the same effect.

## LEEDS ARCHITECTS.

At the annual meeting of the Leeds and Yorkshire Architectural Society held recently Mr. H. S. Chorley (hon. secretary) presented the twenty-eighth report for the past eighteen months. The membership is now 141. The Council express regret that Mr. C. R. Chorley, one of the oldest members of the Society and a past president, has resigned his membership on account of his leaving Yorkshire on his retirement from business. Regret is also expressed at the resignation of Mr. J. Tweedale, and at the death of Mr. E. Birchall, also a past president. At the preliminary and intermediate R.I.B.A. examinations for the north-eastern division of the country, in June and November, twenty-one candidates presented themselves on each occasion. The competition among the associates for the prizes offered by the Society was keener and more enthusiastic than in the immediate previous years, and the work submitted was judged to be of a better and more even quality than had been the case in the three previous years. The silver medal and prize of five guineas given by the president for the best measured drawing of any ecclesiastical or domestic building erected before 1800 A.D. was awarded to Mr. M. S. Briggs for measured drawings of Swinsty Hall, Yorkshire. A special prize of three guineas was awarded to Mr. P. A. Horrocks for measured drawings of Hall-i'-th'-Wood, Bolton; the prize of three guineas for the best design of an entrance lodge and gateway to Mr. Ralph Thorp; the prize of two guineas for the best essay on "Modern Street Façades in Leeds" to Mr. M. S. Briggs; and the sketching prize of three guineas to Mr. J. C. Procter. The Council report that no further steps have been taken to create a chair of architecture at the Yorkshire College. Mention is made in the report of the Council's active interest in the proposed laying-out of Victoria Square, and also in the improvement of City Square. In regard to the former it is pointed out that the first essential is the enlargement of the square on its southern side, the present area being totally inadequate to receive any architectural treatment which would be in scale with the Town Hall. In regard to City Square the president formed one of a deputation from the Society to the Improvements Committee, and asked that a new frontage line at the south-west corner between Wellington Street and Quebec Street should be adopted corresponding to and exactly repeating the building line of the Standard Assurance buildings on the opposite side of the square, and also that the building to be erected on the vacant ground should harmonize, and as far as possible correspond in outline and skyline, with the Standard Assurance buildings. It is satisfactory to record that this suggestion has been adopted. The Council express their gratitude for the valuable collection of architectural works bequeathed to the Society by the late Mr. E. Birchall, and notify that steps are being taken to deposit the Society's library with the City Library authorities for better security and supervision. The accounts showed a balance in hand of £95, as compared with £96 at the end of the previous financial year.

DRAWINGS OF ARCHITECTURE: BY GEORGE C. HAITE, R.I., R.B.A.

## PROFESSOR CAPPER'S LECTURES.

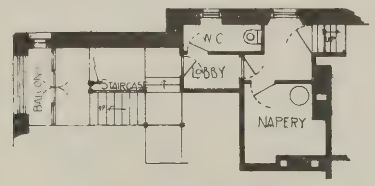
At Owens College, Manchester, last week, in his concluding lecture on the work of the monastic orders in relation to architecture, Prof. Capper said that just as the twelfth century was the century of the abbeys, the thirteenth was the century of the cathedrals. The great cathedrals of the thirteenth century in France represented a movement of revolt; they were built in response to an outburst of national enthusiasm and national feeling which was combined with great religious zeal and fervour. Nowadays it took a whole nation to build a cathedral, but in those days comparatively small areas, such as Paris, Rouen and Amiens, erected these edifices, which might be taken as representative of an outburst of national life as evolved in local areas. Though more or less on the typical cruciform plan, these cathedrals were designed to suggest thoughts embodied in what were perhaps the finest halls in existence—single vast spaces which were roofed over, and produced a sense of unity as though they rose out of the cities which they typified. In England, Winchester, Canterbury, Durham and other cathedrals were abbeys at the same time, but the French cathedrals had nothing to do with the French abbeys. They were built rather in defiance of or in rivalry with the abbeys, expressing, if anything, antagonism to monastic orders. Beautiful as English cathedrals were, they were very different from the French, and he thought that was because of their history. For instance, Canterbury was both a cathedral and an abbey. The eastern extension was built to accommodate the monks. There were really two churches in one—the church of the laity, or people, was the western portion; and the church of the monastery, or the monks, was the eastern portion. The result was to make English churches very long. He did not think the English cathedrals could compare with the French in the unity of design to which he had referred, but they had a charm and beauty all their own. He referred particularly to the way in which they were grouped round the central tower. They would see how it was that so many Benedictine abbeys were preserved, and how it was that the Cistercian abbeys were not. The reason was that the Benedictine abbeys were built in cities, in commanding situations, and they entered into the life of the people, whilst those of the Cistercians were in remote districts. It might have been that at the Norman Conquest the intention was to hold the country by means of the Church as well as by force of arms, but the result had been that the abbey churches, even when the abbeys themselves were suppressed, were still in existence. They were the churches of the people, of the dioceses, and though the abbey itself decayed the church remained. That applied to quite a number of priory churches also, which were at once priories and parish churches.

## Bricks and Mortar.

**Aphorism for the Week.**

*Half the beauty of these old buildings is in their lineaments of age and the curves and wrinkles time and history have given them. Who would dress his grandmother in long clothes, bib and tucker, and shave off her venerable locks to make her look like a baby?*—Charles Keene.

**Our Plates.** "Annaginny," co. Tyrone, was erected two years ago on a picturesque site, and replaced a thatched house of some pretensions. The lower walls are built of white stone from the Carland quarries on the estate. The roofs are covered with red tiles and the timber-work is all of pitch-pine, varnished. The general contractor was Mr. John McNally, of Cookstown, co. Tyrone. The architects were Messrs. Fryers & Penman, of Largs, Ayrshire.—We think it will be generally admitted that the Rhode Island State House, of which Messrs. McKim, Mead & White are the architects, is a very fine building. In our issue for August 5th we published a double-page plate showing the dome, and we can now only repeat what we then said, that the work reflects greatly to the honour of American architecture.

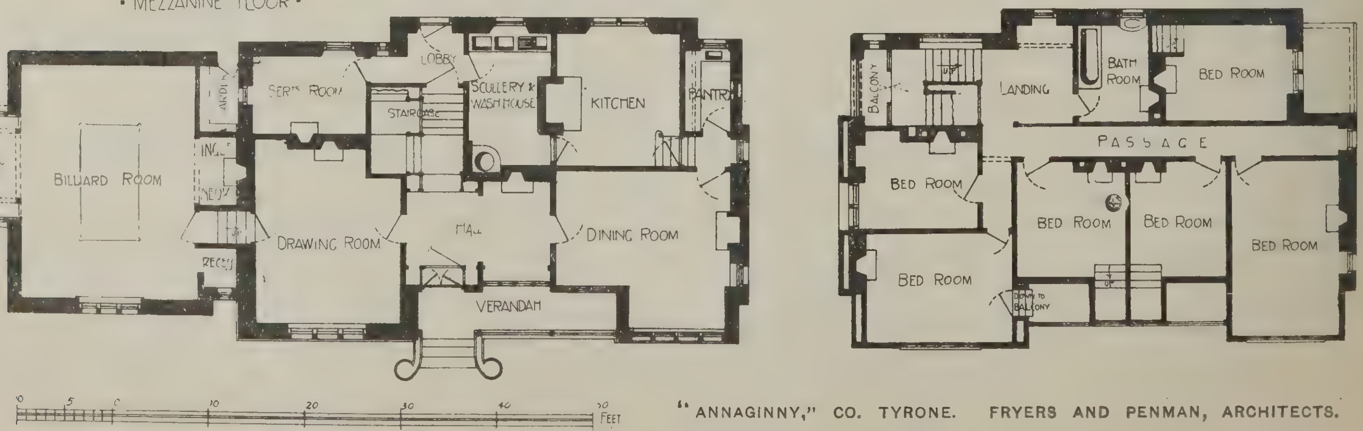


• MEZZANINE FLOOR •

**Architecture in Edinburgh.** At the annual meeting of the Brethren of the Guildry of Edinburgh held recently Mr. Edward Bruce was re-elected Lord Dean of Guild for the ensuing year. Mr. James L. Ewing was elected clerk; Mr. James Wilson, treasurer; Councillors Dobie and Forrest, ex-Dean of Guild Miller, ex-Councillor Walker, Messrs. J. M. Rusk, S.S.C., and John Walker, members of committee; and Mr. James Russell, officer. Regarding the question of the height of buildings, Lord Dean of Guild Bruce expressed the opinion that the statutory height of 60ft. from the street to the ceiling of the highest habitable room should not be altered. It seemed to him the city had suffered in the past by greater heights being granted. He hoped that in the future the statutory height would be adhered to. He was in favour of making an exception in the case of Princes Street, which lent itself to high elevations, and it would be unwise to deal with that street on the same footing as other thoroughfares. He regretted that some new buildings which were being erected in some localities were not so beautiful or so ornate as was desirable. Had the Court control in this respect it should be protective, as it would maintain the beauty which already existed so largely in the city. He wished them to use their influence in seeing that the architecture of their fine streets and buildings was maintained. With reference to the work of the Dean of Guild Court for the past year, he remarked that since he succeeded Lord Dean of Guild Ormiston there had been a revival in the building trade. Last year the number of warrants granted was 780. The major warrants in 1903 amounted to 402, as against 391 in 1902. In 1903 564 warrants were granted for alterations, as against 616 in 1902.

**Kirkwall Cathedral.** Mr. T. S. Robertson writes to the "Scotsman": "I am sorry to see that Sheriff Thoms has left the residue of his estate for what he calls the restoration and repair of Kirkwall Cathedral, a building which has already suffered much at the hands of the restorer, and if again entrusted to him with such a considerable sum of money at his disposal will in all likelihood have all that is fine and interesting in it destroyed. There is now so little of the very beautiful mediæval architecture left untouched in Scotland that I think a strong effort should be made to have what remains of the original of Kirkwall Cathedral preserved, but I do not know how it is to be done. Perhaps the provost and magistrates of the royal burgh of Kirkwall might be able to spend the money on the memorial window and the surroundings of the cathedral, without interfering with the building. The east window, in which the memorial has to be placed, is of four lights, and the idea of changing it into three, as suggested by the will, could surely never be thought of; but the four lights and the rose over these might be entirely filled with painted glass. The only people who encourage the restoration of churches are those who know little or nothing of art. From an architectural point of view restoration in this case would remove one of the few fine examples which are left for study, without adding in any way to its usefulness."

**Ancient Monuments in India.** A resolution of the Government of India directs that in future the annual reports of the purely departmental work of the archæological surveys shall be distinct from the reports of the progress of archæological research in India. The latter are in future to be prepared with the aim of supplying the public and students of archæology with interesting and readable accounts of the archæological work being done in the country year by year. In the words of the resolution, they are to contain clear and accurate accounts of the works of restoration and preservation of important buildings, sites of excavations and fresh discoveries, and will be illustrated. They will also give a *résumé* of the epigraphical, numismatic, exploratory and other work of the department, compiled from special reports of the provincial surveyors and from personal observation. The preparation of drawings should continue slowly and methodically, and they should be given to the public as soon as they are ready, but the free use of the more economical process of photography is inculcated for the illustrative work of the archæological survey. "Whenever scaffolding is erected to carry out repairs to a building the opportunity should be taken to photograph any architectural details which would otherwise be inaccessible to the camera. A complete series of photographs should also be made of both the exterior and interior of buildings selected for extensive repairs before the work of conservation is commenced. In the case of structures of a perishable nature, or in an advanced stage of decay, it is specially desirable that complete photographic illustrations should be obtained without delay. It should further be the aim of the department to make its photographs freely available to students of archæology, for which purpose a catalogue of them should be published periodically." As to the preservation of ancient monuments, the Government does not think that this work is sufficiently attended to at present; and accordingly rules are laid down requiring the surveyors to advise on conservation and restoration within their districts, as well as to make lists of the ancient monuments there, and to assist and supervise the officers of public works in the task of repairing and preserving them. In respect to ancient sites, local governments are desired to permit no excavations except by thoroughly competent persons, and to disturb ancient sites only under the supervision of the local archæological surveyor.



"ANNAGINNY," CO. TYRONE. FRYERS AND PENMAN, ARCHITECTS.

# R.I.B.A.

### M. HOMOLLE ON THE TREASURY OF CNIDUS.

A MEETING of the Royal Institute of British Architects was held on Monday evening at 9, Conduit Street, W., the chair being occupied by Mr. John Slater, B.A.

A paper on "The Treasury of Cnidus and the Monuments of the Ionian Art at Delphi" was read by M. Homolle, who had come over specially from Athens.

Numerous drawings illustrating the paper were hung on the walls; they had been lent for the occasion by the French Government.

The paper was delivered in French. After referring to the late Mr. Penrose—"l'illustre Penrose"—M. Homolle said that in choosing the Treasury of Cnidus as the type of Ionian architecture in the sixth century B.C., he was happy to associate himself with the work of English architects and archæologists who had gathered together in the British Museum the monuments of Asiatic Greece. In order to give an idea of the discoveries which had been made at Delphi he described the Temple of Apollo with the aid of the beautiful drawings of M. Albert Tournaire.

The Treasury of Cnidus is situated at the first turn of the sacred road in the temple enclosure; it is completely ruined, but probably restored with fragments gathered at the foot of the sub-basements, strewed about, or with other pieces which, though not belonging actually to the building, are similar in style. M. Homolle proposed first to justify the restoration by an analysis of the architectonic elements; then to study the decoration of the monument in its architectural ornament proper, its sculptures in high and low relief, and lastly by the paintings by which the one is set off from the other; and then to show the site of the Treasury of Cnidus, and the importance of the Ionian art at Delphi and its relation generally to the history of antique art.

The plan of the temple is that of one *in antis* of 6m. 30—8m. 80. The restoration of the entablature showed the architraves of the front porch, the lateral and rear faces, the enclosed frieze, the border decorated with rings of palm and bundles of lotus; sphinxes and flying victories.

All these members are attached to one another by the necessary bands. Restorations were shown of the capitals, the caryatid and its base (from which the height of the monument is calculated), and of the door. The great feature of the Treasury is the richness, even the surcharge, of its decoration and its sculpture heightened in effect by colour.

The decoration exhibits great uniformity in its motives, varied in their adaptation to each member; it is admirably executed, vigorous, rather heavy in tone, but powerfully decorative.

The bas-reliefs on the frieze running around the four sides of the building consist of—(1) on the west, The Apotheosis of Hercules; (2) on the south, The Carrying-off of the Daughters of Leukippos; (3) on the east, The Combat between the Greeks and the Trojans over the body of Euphorbos under the eyes of the gods assembled in Olympia; (4) on the north, The Gigantomachie. The proportions and forms are those of Ionian archaic art of the sixth century, the composition being governed by the severe laws of symmetry, and the figures grouped equally around the principal motives. Both the drawing and composition recall the vases painted with black or red figures in the severe style of the period. The pediment represents the struggle between Apollo and Hercules for possession of the Tripod of Delphi. In manner it is similar to the frieze. The caryatid shows Egyptian influence, and suggests an interesting comparison with the work at Ephesus. The effect of the polychromatic decoration was to be harmonious, of monumental character, decorative, not realistic. It was carried out in three colours—white, blue and red.

The Treasury is a work Ionian in spirit and workmanship, original in invention, of wonderful execution, a monument of political and moral importance.

In concluding his paper M. Homolle referred to other buildings on the acropolis, the Column of Naxos, the Treasuries of Phoce, Clazomene and Siphnos, and concluded by pointing out the important role which Ionia played in the development of Hellenic civilization.

A vote of thanks to M. Homolle was proposed by Dr. Murray, who spoke of the Treasury of Cnidus as being one of the most charming Greek buildings he had ever seen. They were under a great obligation to M. Homolle for the trouble he had taken in coming from Athens to read his paper before them, and even more as the institutor and head of the excavations carried out by the French Government at Delphi, which in their own time had no equal.

Mr. Macmillan, who seconded the vote of thanks, congratulated the Institute on having secured so distinguished a man as M. Homolle. He only wished the Hellenic Society had thought of it before! But he hoped next year, when the Society would celebrate its twenty-first anniversary, that M. Homolle would do them the honour of further describing the excavations he had conducted. Mr. Arthur Evans, Mr. Myers and Sir Lawrence Alma-Tadema also spoke. Mr. Evans said that only those who had known the village of Delphi before the excavations were undertaken could truly appreciate their magnitude. He expressed his warm appreciation of the great public spirit shown by the French Government, and trusted that the present *rapprochement* would induce the English Government to follow their example. In the undertaking at Delphi they saw not only a wonderful reconstruction of fragments, but the genius of the explorer.

Mr. Slater (in French) conveyed to M. Homolle their appreciation of his presence there that evening, of the services he had rendered to archæology, and also their gratitude to the French Government for the splendid drawings they had been generous enough to lend for the occasion (these drawings will be on exhibition at the Institute till this afternoon). It was announced that a business meeting would be held on November 30th, when Mr. William Woodward would move a resolution in reference to Liverpool Cathedral.

# Views and Reviews.

### Building Superintendence.

A new and revised edition of Mr. Clark's well-known manual on building superintendence has just been published by Messrs. Macmillan & Co. The fact that fifteen editions have been called for testifies to the wide favour this book has met with, and no doubt from an American architect's point of view it is excellent. In such a question as building superintendence, where local conditions are the chief consideration in every problem, it is only in the nature of things that a large portion of this book comes strangely to English minds, and much is published that does not fit the building practice in this country. But we do not think that anyone who is directly concerned with the superintendence of building operations can read this book without being greatly benefited by it. Mr. Clark deals with the matter in a thoroughly practical way, and gives much information on questions of building construction that is not to be found elsewhere in any books on construction. He adopts the very good principle of taking a typical building as an example and following the progress of its erection right through from the setting-out and the foundations to the fittings, showing at each stage how the work should be carried out, the possible contingencies that may affect it, and the things that are generally done or may be likely to occur—including the contractor's bamboozling efforts. Like most of Messrs. Macmillan's books it is the standard work on the subject, and is well produced.

"Building Superintendence—a manual for young architects, students and others interested in building operations as carried on at the present day." By T. M. Clark, Fellow of the American Institute of Architects. Fifteenth edition. London: Macmillan & Co., Ltd., St. Martin's Street, W.C. Price 12s. 6d. nett.

### Joints in Woodwork.

This is a book for amateurs of the home crafts kind, and to such will no doubt be useful. It is clearly written and well illustrated. It deals with a very elementary branch of woodwork construction, but by elaboration and separation the subject of carpentry and joinery is inclined to get distorted—it is all very well for anyone who only wants to make a rabbit hutch, a picture frame, a dog-kennel or similar homelike object, but the student of wood construction had better, perhaps, avoid it.

"Woodwork Joints: How to make and where to use them" By a Practical Joiner. London: Dawbarn & Ward, Ltd., 6, Farringdon Avenue, E.C. Price 6d. nett.

# Correspondence.

### Licences for Valuations.

*To the Editor of* THE BUILDERS' JOURNAL.

KIRKCALDY.

SIR,—Referring to the reply to "Sydenham's" enquiry in your issue for November 4th, it may not be out of place to draw attention to the following letter which I received in answer to an enquiry:—

I R. Office, Burntisland, N.B.
7th March, 1903.

SIR,

Your letter addressed to Mr. New has been forwarded to me, and in answer to which I beg to inform you that by 8 & 9 Vict. c. 76, sec. 1, an appraiser's licence is required—

(1) By every person exercising the calling or occupation of an appraiser.

(2) By every person who, for or in expectation of any gain, fee or reward, shall make any appraisement or valuation *chargeable by law with any stamp duty*

(*Note.*—Licensed auctioneers and house agents are exempt.)

You will observe that any person exercising the calling or occupation of an appraiser must take out a licence, whether the appraisements made by him are liable to stamp duty or not. Similarly, a licence is necessary if any person for or in expectation of any reward makes an appraisement or valuation liable to stamp duty.

Now, appraisements or valuations made for and for the information of *one party* only, and not being in any manner obligatory as between parties either by agreement or operation of law, are exempt from stamp duty.

Therefore, a single appraisement for and for the information of *one party only*, made by a person not exercising the calling or occupation of an appraiser, nor holding himself out as such, would not render the person liable to licence duty, even if he did receive a fee for his work.

I am, Sir, your obedient Servant,
J. I. FOOT,
Supervisor of Inland Revenue.

It is interesting to compare the foregoing with Messrs. Hornsey & Monkman's letter in your issue for March 11th last.—Yours faithfully,

D. FORBES SMITH, A.R.I.B.A.

[Owing to the pressure on our space we are obliged to hold over till next week several letters in reference to "Dinging" and "Scientific Masonry."]

**St. Andrew's Church, Alexandra Park, Muswell Hill,** was consecrated recently. It has cost £8,000. Seating accommodation is provided for 800.

# FLUSHING TANKS.*

**By C. T. ALFRED HANSSEN, A.M.I.C.E.**
(*President of the Civil and Mechanical Engineers' Society.*)

THE great epidemics of cholera which occurred during the middle of last century were, as many similar visitations have been, really blessings in disguise and gave a great impetus to sanitary science, as all classes of society became interested in the prevention of such epidemics, and their causes were more thoroughly investigated than they had ever been before.

It was soon recognized that one of the principal causes of epidemics in towns is the pollution of the subsoil with organic impurities, and that in order to prevent this pollution it is necessary to carry off all the waste products due to the vital processes of men and beasts as quickly as they are formed, and to render them inoffensive either by utilizing them as manure or by getting rid of them as cheaply as possible in some other way. It is interesting to follow the steps by which it has been made possible to convey the solid and liquid refuse from the houses to the sewage outfalls and to ascertain what *rôle* flushing and flush tanks have played in it.

The sewers built before 1840 were as a rule mere underground passages with vertical sides, semicircular top and segmental inverts, and no special effort was made to render them watertight. The inverts were ordinary bricks set in sand, like paving-stones, and afterwards grouted with cement. In water-logged ground these sewers became surcharged with large volumes of subsoil water; in dry ground the liquid parts of the sewage leaked into the subsoil and polluted it, while the solid parts accumulated in the sewers and produced filthy decomposing deposits which had to be removed by manual labour.

The first attempt at remedying this state of things was simply to increase the size of the sewers; apparently this met both difficulties by making the sewers able to convey more subsoil water in water-logged ground and by making it easier for men to get into them and clean them out in dry ground. As, however, the subsoil was still polluted by leakage, and the removal of sludge from the sewers by manual labour was expensive and extremely offensive, not only to the men engaged in the work but also to the general public, another solution had to be found.

It is to the labours of the sanitary authorities of Westminster and Marylebone that we owe the knowledge of the first principle of sanitary sewers, namely, that they should be watertight and that they should be laid at such a gradient that the sewage will flow through them with a velocity of about 2½ft. per second, as this velocity was found experimentally to remove all deposits from the sewers and to make them self-cleansing.

The velocity of flow in sewers does not, however, depend solely on the gradient at which they are laid, but also to a very large extent upon the volume of sewage flowing through them. A sewer may therefore be perfectly self-cleansing when flowing half full or full, and still be a sewer of deposit if for some reason or other the volume of sewage estimated by the designer has not been forthcoming, or when the sewer has been designed to carry off a rainfall that only occurs during a few hundred hours each year and leaves the sewer almost empty during the remaining time, say about 300 days out of the 365.

How great the difficulty is to get a sufficient volume of sewage during dry weather may be inferred from the fact that the sewage from 5,520 persons will only fill a 9in. pipe half-full during the time of maximum flow with a velocity of 2½ft. per second, and that during the night the volume of sewage from such a population decreases to about one-fifth and the velocity to 1·66ft per second. A fairly densely populated urban district has about 150 inhabitants per acre, and a 9in. pipe is therefore amply sufficient for the dry-weather flow of sewage from an urban area of 37 acres, where the water-supply amounts to 30 gals. per head per day.

If the difficulty in getting small sewers properly filled is so considerable, it may be imagined how much more difficult it is to fill a sewer during dry weather when it is built large enough to deal with a rainfall of 1in. per hour, which for small areas with impervious surfaces may amount to sixty-five times the dry-weather flow.

In the early days of sanitary engineering, when sewers were large and gradients flat, the question of flushing such sewers soon became a very important one. Egg-shaped sewers 3ft. high were put in streets where the maximum dry-weather flow of sewage was quite insufficient to produce a current 3in. deep on the inverts, and great difficulties arose from deposit of silt in such sewers.

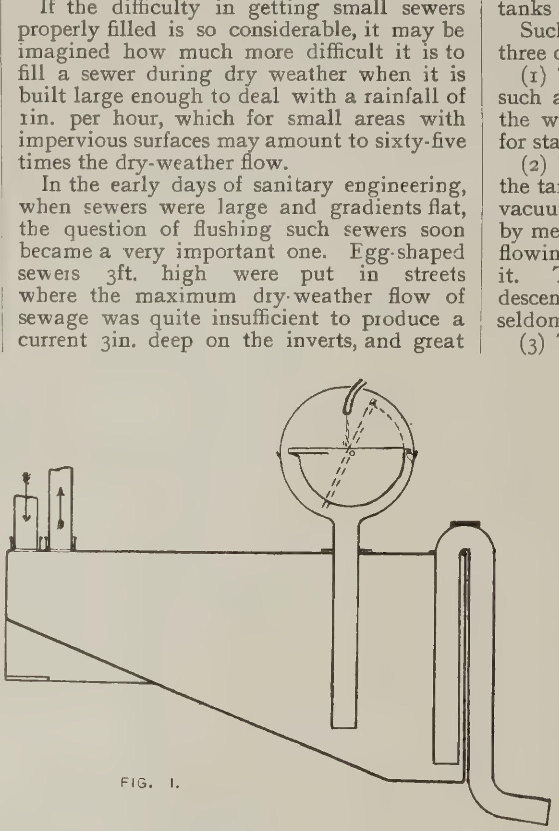


FIG. 1.

The first attempts at flushing, by methods still popular on the Continent, were by means of sluice gates built into the sewers themselves, and closed periodically so as to allow the sewage to accumulate behind them. When a sufficient quantity of sewage was collected in this manner, the sluice gate was opened by hand and the whole volume of sewage swept through the sewer with a considerable velocity. This way of flushing large sewers has not proved a success; for although the effect upon the sewer in front of the sluice gate may be very considerable, the part behind the sluice gate is not sensibly improved by the flush, and considerable quantities of silt are deposited during the time of impounding, so that the upper part of the sewer, where flushing is most needed, gets into a worse state than it would be if no flushing were attempted. Moreover, the action of the flush produced in this manner only extends to a comparatively limited distance, and the silt and detritus held in suspension when the flushing water moves at a higher velocity are again deposited in another part of the sewer, when the velocity begins to fall below 2½ft. per second, forming banks of sand and grit in the sewer which must again be removed; so that such flushing only results in moving the grit from one part of the sewer to another.

The difficulty in flushing a large sewer when the dry-weather flow of sewage is small is indeed so great that for this reason alone it is desirable to adapt the separate system o sewerage, and thus to reduce the size of the sewers to the smallest possible dimensions by diverting the rainwater from them as much as practicable, and letting it flow through separate channels to the nearest water-course.

When the sewers are reduced to a moderate size it becomes possible to flush them efficiently, and a large number of automatic tanks are in use for this purpose.

Such tanks may be roughly divided into three classes:—

(1) Tanks with mechanical movements, such as tipping basins, used either alone for the whole flush or together with a syphon for starting them.

(2) Tanks with "vacuum" syphons, where the tank is discharged by producing a slight vacuum in the descending leg of the syphon by means of a thin stream of water overflowing from the tank and falling through it. The water-seal at the foot of the descending leg of the syphon in this case is seldom more than about an inch.

(3) Tanks with "plenum" syphons, where the outlet pipe is provided with a deep water-seal, sometimes as much as 36in. deep, the tank being filled with water to a corresponding height above the top of the syphon. The discharge takes place when the air enclosed and compressed in the syphon by the action of the water in the tank is allowed to escape either by means of a vent-pipe or by forcing the water-seal.

The first class of flush tanks depend on the difference between the position of the centre of gravity when the tank is empty and when it is full of water. The tank is mounted on trunnions so as to tip easily, and loaded so as to stand in a vertical position when empty; when filled with water the centre of gravity of the whole mass is shifted so that it falls in front of the trunnions, and the tank tips forward so as to discharge its contents into the sewer.

Such tanks are, however, somewhat noisy in their action; they are apt to stick, and the trunnions gradually wear out, so that they are not now generally used.

In many flush tanks a small tipping basin is used for starting a larger syphon tank, as in Shone's flush tank (Fig. 1). This tank, although it has many advantages and can be used for flushing with crude sewage, has never come into general use, chiefly owing to the above-mentioned drawbacks.

The second class of flush tank with "vacuum" syphon is chiefly represented by the well known Rogers Field tank (Fig. 2). This was patented in 1875, and has done good service in flushing sewers with clean water; it is still extensively used in spite of being somewhat delicate in adjustment and liable to fail if the standpipe should get

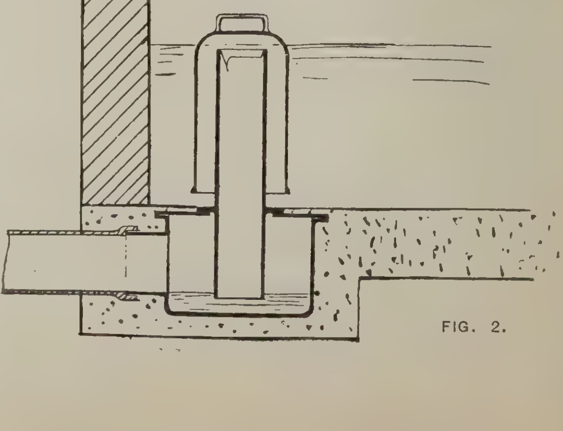


FIG. 2.

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[*] A paper read before the Civil and Mechanical Engineers' Society on October 1st, 1903.

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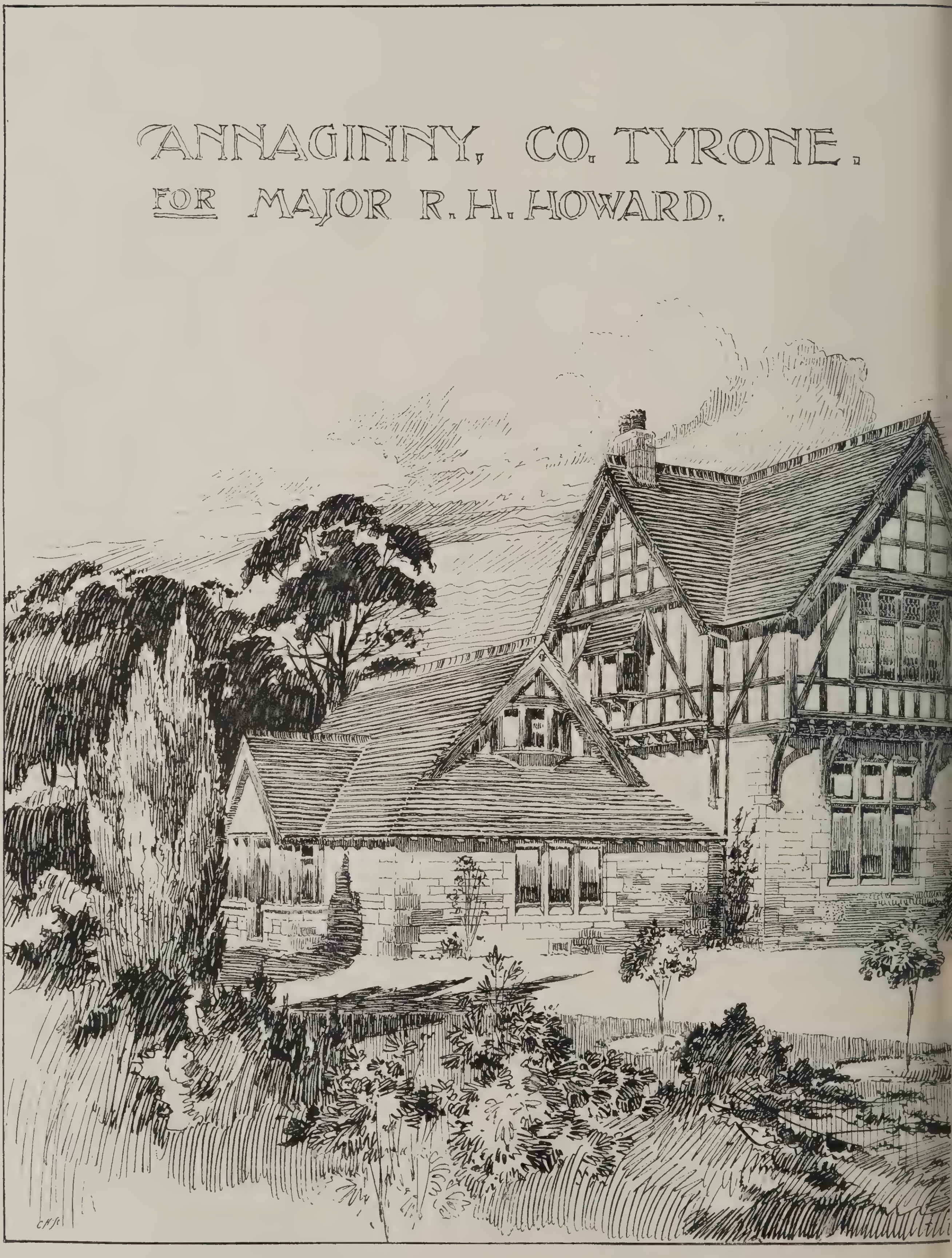

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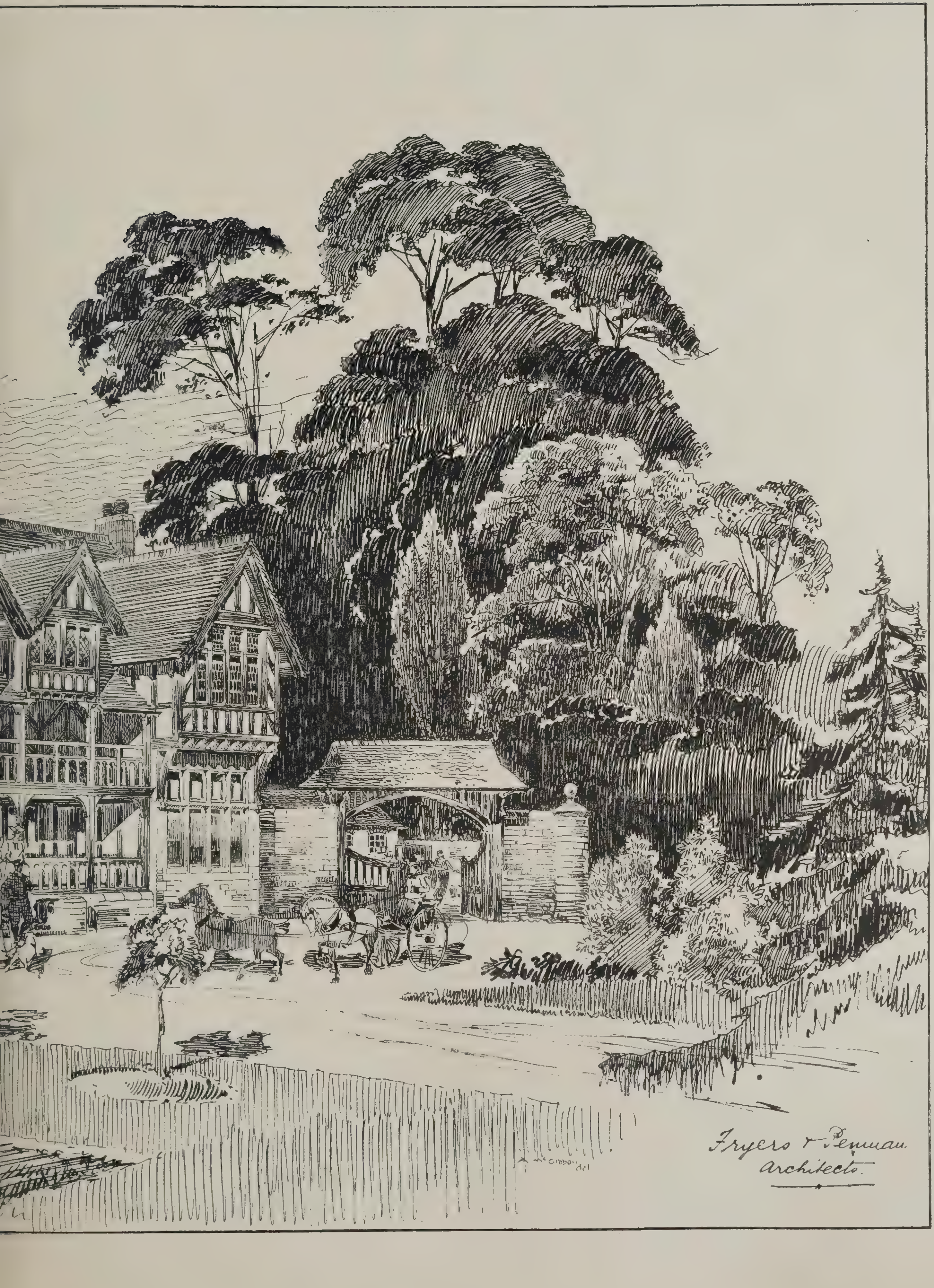
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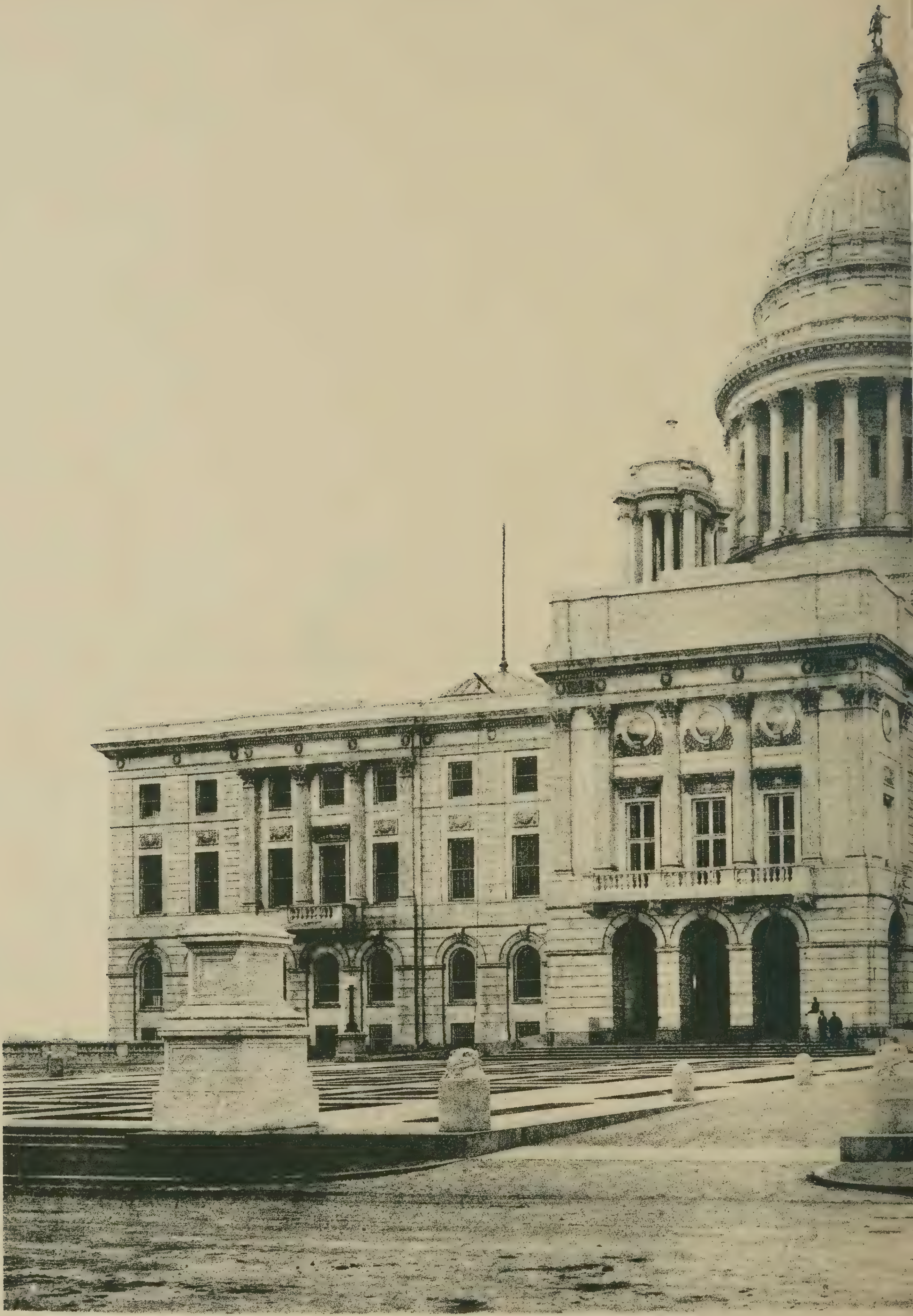
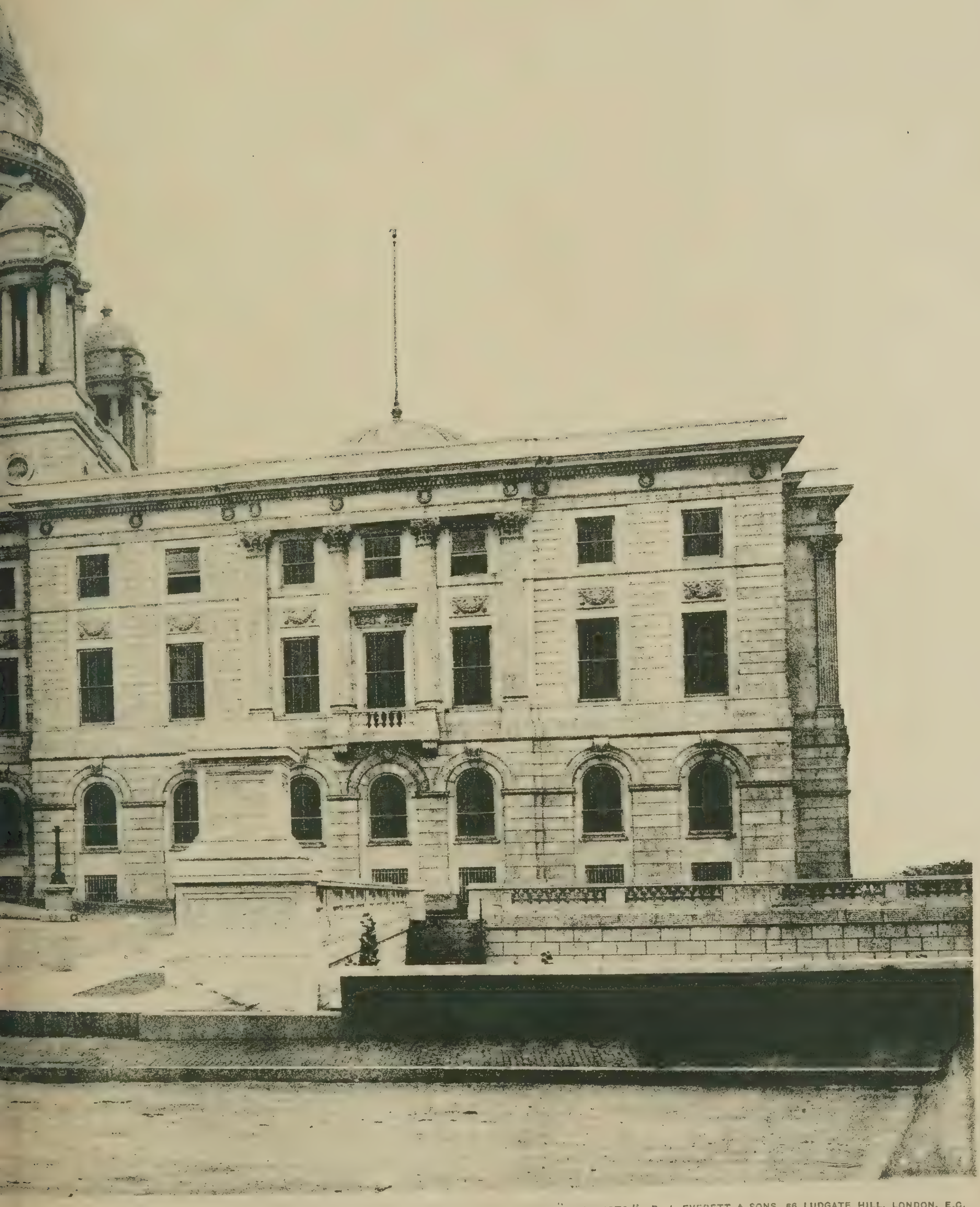


RHODE ISLAND STATE HOUSE, PROVIDEN



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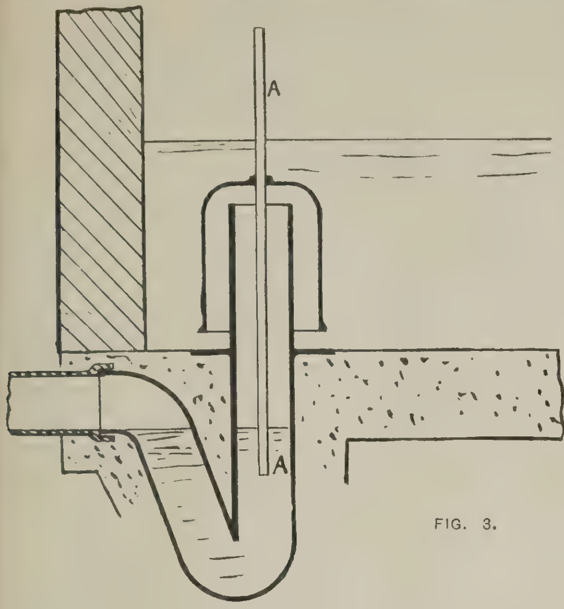

FIG. 3.

out of the perpendicular, or if any dirt should accumulate on the dripping edge of the pipe.

The action of any syphon flush tank may be divided into four periods, namely:—

(*a*) *The period of filling.*—In a flush tank this should be as long as possible, so that a small driblet of water may be gradually accumulated and discharged with considerable force when the tank is full

(*b*) *The period of starting*, during which the level of water in the tank gradually rises above the top of the stand-pipe to a height determined by the water-seal at the bottom of the pipe. For a vacuum syphon this seal does not generally exceed an inch, while for a plenum syphon it may be from 9in. to 3ft., according to the size and design of the syphon, allowing the water in the tank to rise to this height before the discharge begins. In the vacuum type a slight vacuum is created in the vertical stand-pipe when the water begins to overflow, as the stream of water being directed towards the centre of the pipe and prevented from trickling down the sides, a part of the air in the stand-pipe escapes through the water-seal at the bottom of the pipe. In this way the syphonage is established and the discharge is started. For plenum syphons the action is somewhat different, as the water in the long leg of the deep seal is gradually depressed until it reaches either the opening of a vent-pipe, as in Adams's flush tank (Fig. 3), or expelled altogether, as in Miller's or in Shone and Ault's flush tanks (Figs. 4 and 5). In either case the superincumbent water above the top of the syphon pipe rushes out as soon as the plenum in the pipe is removed, and the syphon action is in this way established.

(*c*) *The period of discharge*, which in order to give the best possible effect to the flushing water should be as short as possible. This is secured by using a large syphon pipe working with a maximum head above the invert of the sewer so that a large volume of water is discharged with a considerable velocity. As the quantity of water required to flush a given sewer varies as the square of its length and directly as the velocity of discharge, this is a matter of some importance, though it is very frequently overlooked.

(*d*) *The period of stopping the syphon action.*—This is one of the most serious difficulties, especially in connection with plenum syphons, as the deep seal prevents air from entering freely into the long leg of the syphon and so restoring the atmospheric pressure in it. If this is not done, the flushing action of the tank is entirely suspended and an equilibrium is established which allows the water in the tank just to reach the top of the syphon pipe and flow out at exactly the same rate as it flows into the tank. This action may continue for any length of time, and it is therefore essential that some device should be used for compelling air to enter the syphon after each discharge and effectually break the action of the syphon.

The three "plenum" tanks already referred to (Figs. 3, 4, 5) show three such devices, which may be taken as representative of all tanks of this class.

*Adams's flush tank* (Fig. 3) works with a vent pipe A reaching above the water in the tank and extending to a few inches below the level of the water seal. When the water in the U bend is forced down to this point by the plenum in the pipe the compressed air escapes and the syphon is started. Towards the end of the discharge this vent-pipe serves to admit air into the long leg of the syphon, and thus to stop the action of the syphon. The diameter and immersion of the vent-pipe are therefore of great importance for the proper working of the tank, and any accumulation of dirt in this pipe would seriously interfere with it. The vent-pipe is therefore arranged in such a manner that it can be easily cleaned. The tank should not be used for very dirty water, but is very reliable and effective when used for flushing with reasonably clean water.

*Miller's flush tank* (Fig. 4). In this tank the vent-pipe is dispensed with, and the water-seal, which is very deep, is forced by the air-pressure in the syphon pipe when the water in the tank reaches its proper level. In order to admit air into the pipe C when the discharge is completed, a small auxiliary syphon S is provided, the short leg of which reaches a little below the bell E of the main syphon. This auxiliary syphon continues to discharge after the main syphon has stopped, and lowers the final water level, so that air enters under the bell E and fills the pipe C. The tank works very well indeed so long as the auxiliary syphon is clean, but this syphon is easily blocked and somewhat difficult to clean out again.

*Shone and Ault's flush tank* (Fig. 5) is in principle somewhat similar to the Miller syphon, but avoids its drawbacks by using two complete full-size syphon inlets, one of which is somewhat higher than the other. The first or deeper inlet continues to discharge until air can enter freely through the second or upper inlet, breaking the syphon by introducing a large volume of air into it. This syphon has therefore the advantage of offering no impediment to the passage of crude sewage, and on that account may be able to realize the sanitary engineer's ideal of collecting the small driblets of sewage from a number of houses at the dead ends of the sewers and sending them out in a strong flush; thus keeping the upper parts of the sewers clean without resorting to the use of large quantities of potable water.

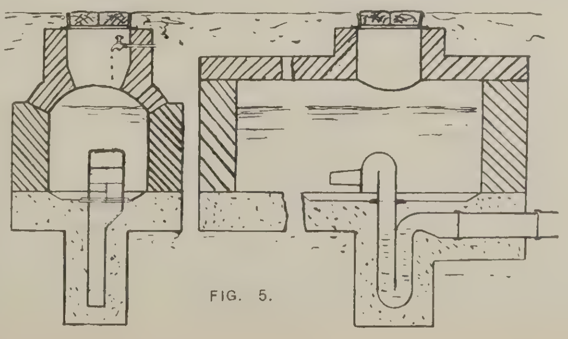

FIG. 5.

The author has often felt the necessity of some formula for determining approximately the quantity of water required for flushing a given sewer, or the distance to which any given flush tank may be relied upon to clean a sewer effectually; and last year in submitting an important sewage scheme to the Russian Government it became very desirable that such a formula should be included in the proposals, as the advisers of that Government attach greater importance to theoretical calculations than is generally the case in this country. The working-out of such a formula, however, is somewhat difficult, as the amount of flushing water required does not depend upon the length and diameter of the sewer alone, but also on its inclination and upon the initial velocity with which the sewage is discharged.

Mr. S. H. Adams, A.M.I.C.E., who has carried out a very complete series of experiments on the effect of flushing sewers, has been kind enough to send the author a number of diagrams giving the results of these tests. The author has therefore proposed the following formula based upon these experiments:—

$$l = 0{\cdot}291\sqrt{\frac{\text{Q}\,(v^2 - v_2^2)}{a \times (\text{S}_\text{m} - \text{S}_2)}}$$

$$\text{Q} = \frac{11{\cdot}8 \times l^2 \times a(\text{S}_\text{m} - \text{S}_2)}{v_1^2 - v_2^2}$$

in which $l$ = length in lineal yards of the sewer to be flushed.

The final velocity of the flushing water to be $v_2$, which in order to be effectual should not as a rule be less than 2 50ft. per second.

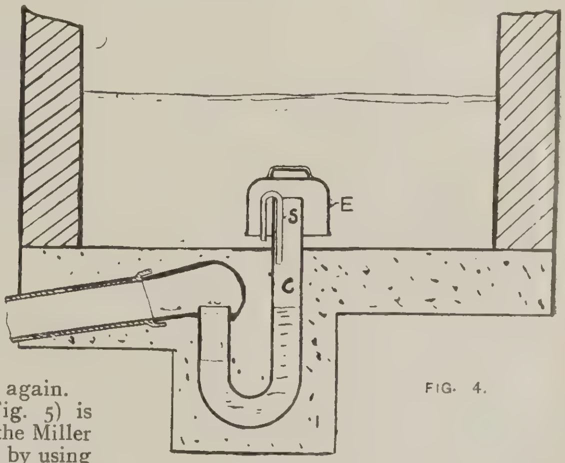

FIG. 4.

$v_1$ = initial velocity of water in feet per second as it issues from the syphon. It depends upon the drop $h$ (in feet) from the centre or mean water level of the flush tank to the centre of the sewer, or $v = 6{\cdot}0\sqrt{r}$.

$v_2$ = final velocity of flushing water.

$\text{S}_\text{m}$ = sin. of inclination theoretically required for giving the mean velocity $v_\text{m}$ to the flushing water.

For a velocity varying from $v_1$ to $v_2$ the mean velocity would be

$$v_\text{m} = v_2\left(1 + \log._\varepsilon \frac{v_1}{v_2}\right) - \frac{v_2^2}{v_1},$$

on the supposition that the velocity decreases according to a hyperbolic curve, which appears approximately correct according to Mr. Adams's experiments:—

$\text{S}_2$ = actual sin. of inclination of the flushed sewer;

$a$ = sectional area of the flushing water as it enters the sewer;

$\text{Q}$ = quantity of flushing water available or required in cubic feet.

In the formula just given the expression $Q(v_1^2 - v_2^2)$ represents the momentum of the body of water issuing from the flushing tank between the limits of velocity $v_1$ and $v_2$ while the expression $a(s_m - s_2)$ represents the resistance acting through the length $l$ and gradually absorbing the momentum of the water. The retardation due to $s_m$ is to some extent compensated by the actual inclination of the sewer, so that in a very steep sewer where $s_m$ becomes equal to $s^2$ the initial velocity may be maintained throughout the whole length of the sewer.

In order to obtain correct results, the value of $s_m$ should be found from Kutter's formula, which may be simplified to the following expressions, for varying diameters and coefficients of roughness ($n$) when $D$ = diameter of sewer in feet:—

For sewers 7in. to. 12in. diam. $n = 0{\cdot}0115$,

$$s = \left(\frac{D + 0{\cdot}96}{99{\cdot}6D}\right)^2 \times v^2;$$

for sewers 12in. to 15in. diam. $n = 0{\cdot}0112$,

$$s = \left(\frac{\sqrt{D} + 0{\cdot}93}{101{\cdot}6D}\right)^2 \times v^2;$$

for sewers 15in. to 18in. diam. $n = 0{\cdot}0107$,

$$s = \left(\frac{\sqrt{D} + 0{\cdot}89}{105{\cdot}8D}\right)^2 \times v^2;$$

for sewers 18in. to 24in. diam. $n = 0{\cdot}0105$,

$$s = \left(\frac{\sqrt{D} + 0{\cdot}88}{107{\cdot}0D}\right)^2 \times v^2;$$

for brick sewers $n = 0{\cdot}0130$,

$$s = \left(\frac{\sqrt{D} + 1{\cdot}08}{90{\cdot}45D}\right)^2 \times v^2.$$

The agreement between the results observed by Mr. Adams and those found from the above formula is very close, as may be seen from the results given in the table below.

The author regrets that he has as yet been unable to verify the formula by further independent tests on sewers under various conditions, but suggests that other engineers may be able to so; and when long lengths of sewers are laid at an uniform gradient it would be comparatively easy to ascertain how far the formula holds good for sewers of different sizes laid at various gradients.

It appears, however, from the formula that the effect of the flushing water only increases as the square root of the quantity, so that better results may be expected from two or more small tanks placed at suitable intervals than from a single large tank at the head of the sewer.

The effect of the flush is further increased directly in proportion to the initial velocity, and every effort should be made to obtain the highest possible initial velocity by utilizing the available head, and by using syphons of ample size.

Finally, it should be observed that to lay the sewers at a steep gradient will greatly assist the action of the flush tanks, while flat gradients increase the resistance to the flow of the flushing water in proportion to the average velocity, and therefore go a long way toward neutralizing the effect of the high initial velocity.

# Keystones.

**A new Church Institute at Limehouse** is being erected from plans by Mr. W. H. White.

**At the Parish Church of St. Alphege, Greenwich,** a memorial window has been erected.

**"The Builders' Journal" has been sold out** during the past two weeks, and we regret that we have been unable to supply many readers with copies. Arrangements have been made, however, for a larger supply in the future.

**Mr. H. H. Collins, F.R.I.B.A., F.S.I.,** of 61, Old Broad Street, has been elected for a further period of six years as alderman of the borough of Paddington. Mr. Collins is also chairman of the Public Health Committee of the borough.

**The National Art Collections Fund** has been formed (analogous to those already existing in Paris and Berlin) with the object of securing pictures and other works of art for our national collections. Among its many distinguished members are Mr. Reginald Blomfield, Mr. Aston Webb and Professor Waldstein.

**Cripplegate and Milton.**—A scheme is on foot for the restoration of the north wall of Cripplegate Church, where Milton is buried. At least £3,500 will be required for the work, and of this £2,000 has been subscribed locally. Mr. Deputy Baddeley has promised a statue of Milton provided sufficient funds are collected for the purchase of a site adjoining the church on which it can be erected.

**Liverpool Cathedral.**—At a meeting of the executive committee of the Liverpool Cathedral scheme last week it was decided to proceed, in the first instance, with the erection of the main fabric of the building, including the choir and the transepts, affording accommodation for a congregation of 3,500, at an approximate cost of £240,000. The total cost of the cathedral is estimated at £500,000. Mr. Bradbury (consulting surveyor) reported that the demolition of houses on St. James's Mount had been begun preparatory to the laying of the foundations of the cathedral. The superficial area occupied by the cathedral when completed will exceed that of any other cathedral in Great Britain. His Majesty the King has intimated that he will give every consideration to the request which has been made to him that he should lay the foundation-stone—which ceremony is expected to take place in the coming spring.

**A Blackpool Competition.**—The Fylde Water Board recently invited competitive designs for new offices to be erected at the corner of Sefton Street and Dixon Street, Blackpool. The competition was limited to architects having offices within the Fylde Water Board area, and fifteen designs were sent in. After careful consideration the first prize was awarded the plans forwarded by Messrs. H. and W. Wade, 27, Birley Street, Blackpool and St. Annes, under the motto of "Fair Trade." The total cost is estimated at £7,500, and the entrance is so arranged that it will be exactly opposite Church Street, so that the clock tower which will adorn the front will be seen from Church Street along Temple Street. It will be a three-storeyed building, with a basement, and built of brick and yellow-stone facings.

| No. | Initial velocity. $v_1$ | Final velocity. $v_2$ | Mean velocity. $v_m$ | Sin. of inclination of sewer. $s_2$ | Sin. inclination due to $v_m$. $s_m$ | Diameter of sewer inches. | Quantity of flushing water. $Q$ | Length of sewer in yards. | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Calculated from formula. | Observed by S. H. Adams. |
| 1 | 6·50 | 2·50 | 3·93 | 0·004 | 0·0092 | 9″ | 56·26 | 275 | 266 |
| 2 | 5·00 | 2·00 | 3·03 | 0·005 | 0·0055 | 9″ | 75·50 | 782 | 800 |
| 3 | 7·25 | 2·30 | 4·22 | 0·0017 | 0·0049 | 15″ | 1326·00 | 1162 | 1116 |

**A new Church and Vicarage at Holbeck, Leeds,** is being erected from the plans of Mr. G. F. Bodley.

**Underground Bakehouses.**—An order of the Secretary of State has been made prescribing 500 cub. ft. of space for every person, in place of 250ft. hitherto required.

**The new Church of St. Barnabas, at Walthamstow,** was opened recently. It has cost about £20,000. It is built of red bricks, with stone dressings.

**Competition for new Municipal Buildings at Leyland, Preston.**—Messrs. G. Kay & Son, of the Isle of Man, have been awarded the premium of £15.

**The Architectural Student.**—In the course of an address on "Architectural Education" which he delivered to the Sheffield Society of Architects and Surveyors last Thursday Mr. Hugh Stannus, F.R.I.B.A., said that students should generalize until they were about eighteen years of age and specialize afterwards, cultivating also literary and legal talents.

**A Restored Chapel.**—Mr. Everard Hambro has restored the little chapel of St. Catherine in the woods above his seat, Milton Abbey, Dorset. The chapel was, according to tradition, built by King Athelstan to mark his great victory at Brunanburh. It contains Saxon and Early Norman work, but since the Reformation the "chapel in the wood," as it is called, has been sadly desecrated, having been used in succession as a pigeon-house, a labourer's cottage and a carpenter's workshop.

**Competition Reform Society.**—The committee disapproves of the conditions of the competition for elevations for police and fire stations at New Windsor because there is no professional assessor, that elevations only are required, that the Corporation reserve the right of erecting the building without further payment to the successful competitor than the premium of £25, and that the premiums are insufficient. Members are requested to abstain from competing unless the conditions are satisfactorily revised.

**Scotch Gothic.**—At a recent meeting of the Edinburgh Architectural Association (Associates' Section), Mr. J. A. Arnott in the chair, Mr. Ramsay Traquair delivered a lecture on "Notes on Later Scotch Gothic." The lecturer traced shortly the rise and progress of Gothic work in Scotland, pointing out the manner in which the earlier English work was replaced by a mixed school influenced both from France and England. Great stress was laid on the need of studying the simpler examples of the later style as a basis on which to raise new ideas. A number of characteristic buildings of the Later Decorated period were then described more fully. The paper was illustrated by lantern slides.

**Awards to Manchester Students.**—The Manchester Society of Architects have made the following awards:—For the most satisfactory work in the R.I.B.A. course at the Manchester School of Technology: 1st year course, Mr. R. J. Vernon; 2nd year course, Mr. S. Moss. For the best work in the evening classes of architectural design at the Manchester School of Art: Mr. H. B. Laycock. For the best set of measured drawings and sketches suitable for publication in the Society's sketch-book (Mr. Beaumont's prize): Mr. C. Paterson. For the best set of architectural sketches in connection with the summer visits: first prize, Mr. Frank Dyer; second prize, Mr. J. H. Somerset. For the best set of measured drawings: first prize, Mr. J. H. Somerset; second prize, Mr. R. J. Vernon. For the best commentary on old buildings of the neighbourhood of Manchester, in connection with Mr. Corbett's map: Mr. S. H. Oldham. For the best design for window and balcony (junior class of design): Mr. Norman Taylor.

# Enquiries Answered.

*The services of a large staff of experts are at the disposal of readers who require information on architectural, constructional or legal matters. Questions should in all cases be addressed to the Editor. The querist's name and address must always be given, not necessarily for publication.*

### R.I.B.A. Examinations.

Halifax.—W. M. writes: "(1) Is Banister Fletcher's 'History of Architecture' sufficient to study for Subjects III. and IV. in the Intermediate R.I.B.A. examination? (2) Which is the best method of describing the entasis of a column?"

(1) No. You should also read the books referred to in the R.I.B.A. Kalendar. (2) See p. 393 of our issue for January 24th, 1900.

Elgin.—D. J. C. writes: "What book would be most suitable for the study of elementary mechanics and physics for the R.I.B.A. examinations?"

"Lessons in Elementary Physics," by Balfour Stewart, price 4s. 6d. post free from these offices, and the articles which recently appeared in this journal on building construction.

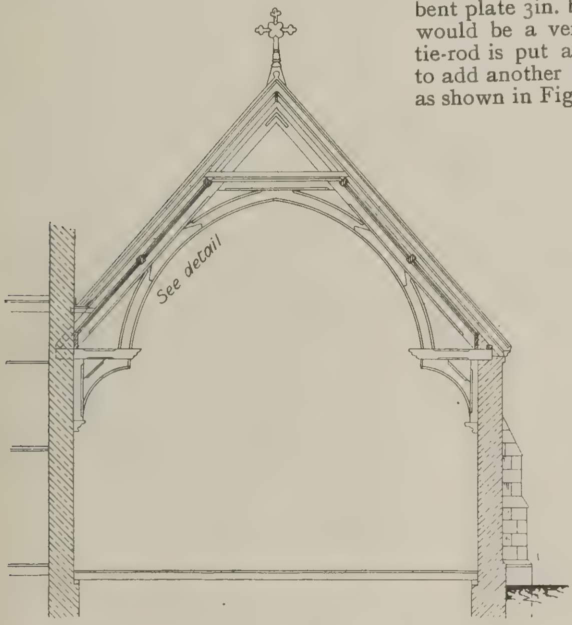

Fig. 1

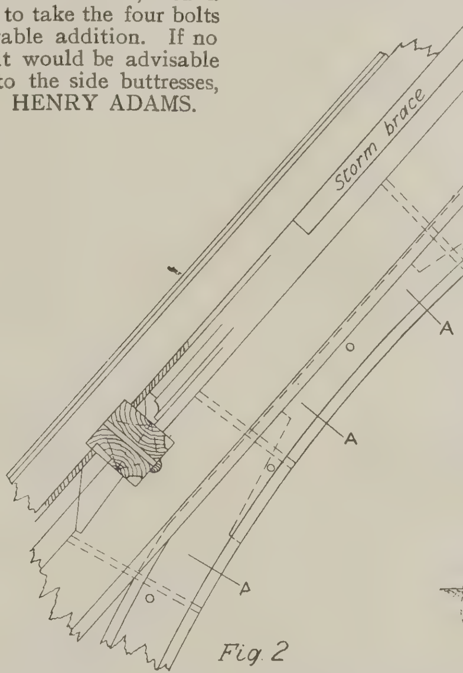

Fig. 2

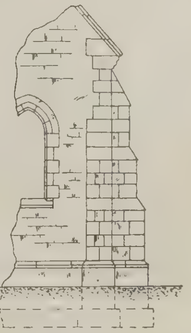

Fig. 3

### Books on Architecture.

Bray.—C. J. D. writes: "Kindly name a book giving the correct proportions of classic work and the relations they bear to one another."

Spiers's "Orders" (to be obtained from these offices, post free, price 10s. 6d.).

Derby.—T. C. L. writes: "Kindly name some books, of reasonable price, dealing with the design and construction of schools."

"Modern School Buildings," by Felix Clay (to be obtained from these offices, price 25s., post free).

### Perspectives.

Tynemouth writes: "Kindly explain how to make a quick perspective sketch of a building. I know the usual method of projecting from the plan through the picture-plane to the spectator, but in a large drawing this takes rather a long time and requires considerable space."

See p. 81 of our issue for March 6th, 1901. A very good system, and very quick to work, is to use the outlined sheets published under the title of "R.'s method" by Mr. B. T. Batsford, and reviewed on p. 174 of our issue for May 6th last.

### Sizes of Timbers.

Specification writes: "Is there a book published giving the trade sizes most easily obtained of all timbers, doors, &c.?"

We do not know of a book specially dealing with the subject. There are no regular standard sizes, but the timbers most in use will be found in the market sale lists of the timber auctioneers.

### Hammer-Beam Truss.

Dublin.—J. L. D. writes: "Would the roof principal shown on the accompanying detail drawing be strong enough without iron tie-rods? There are buttresses outside where the principals come; walls 2ft. thick."

Fig. 1 is taken from the general drawing and Fig. 2 from the detail of roof. In the latter the curved brace being made up of three 2in. timbers connected together by ½in. bolts, as shown by circles, the through bolts to the principal rafter must be shifted from the original positions shown at A into the new positions indicated by dotted lines, and a bent plate 3in. by ⅜in. to take the four bolts would be a very desirable addition. If no tie-rod is put across, it would be advisable to add another storey to the side buttresses, as shown in Fig. 3. HENRY ADAMS.

### Liability in Rebuilding.

York.—Enquirer writes: "In pulling down a building in order to rebuild, I find the adjoining house and shop has no wall of its own, with the exception of a 5in. wall in one room. Both properties are old, and the adjoining one leans towards us. I presume I am bound to take all care in the building operations, but am not liable for damage occurring to the adjoining property. What is the law and the custom as to protecting the exposed rooms which are occupied? Should the building owner pay for necessary hoarding while the new wall is being built, and is he liable for damage caused by wet getting in, &c.; also when the new wall is built will he be liable for rendering water-tight with lead flashings the junction of the old roof to this wall; and who will have to bear the expense of plastering the new wall towards the old property, repairing and finishing generally?"

The property having presumably been in existence more than twenty years, the adjoining owner by the process of time has become entitled to the use and support of the wall you have pulled down, and I consider you are liable to do everything necessary to put him in as good a position as he was before you removed it, whether the work be structural or decorative. There is some legal doubt as to your liability in the way of compensation for inconvenience and damage during the execution of the work, but I advise you to take all reasonable precautions to minimize the damage and to put up temporary boardings if necessary. F. S. I.

### Sewers Across Private Property.

Surrey writes: "Where can information and prices be obtained for making landlords and tenants' compensation claims in detail against local authorities for taking their sewers across private property, with the consequent manholes, lamp-holes, &c., connected therewith?"

See Fletcher's "Valuations and Compensations" (price 6s. 6d.) and "Arbitrations" (price 5s. 6d.). Both books are published by B. T. Batsford, 94 High Holborn, London. Under the Public Health Act of 1875, section 308 provides that if the compensation claimed does not exceed £20 it may be ascertained by and recovered before the justices. If above that amount (or under £20 when the parties do not desire an assessment by a court of summary jurisdiction) then any dispute must be settled by arbitration as provided in section 180 of the same Act. Much useful information bearing on the subject will be found in Lumley's Annotated Public Health Acts (price 48s.), published by Messrs. Shaw & Son, Fetter Lane, E.C.

T. E. C.

### Strength of Flitched Beams.

London, S.E.—Surveyor writes: "With respect to the strength of flitched beams, *e.g.*, a wooden beam sawn down the middle longitudinally, and bolted together again, but with a plate of iron or steel between the two pieces of timber, Mitchell says that the strength of such a beam will be 'the strength of the timber plus the strength of the iron,' and he gives an example, using the general formula $\text{B.W.} = \frac{kbd^2}{l}$ and considering the iron as one beam and the timber as another beam, combining the results to give the total breaking weight. Mr. Drew, in 'Specification,' says that the actual strength of such a beam 'is by no means equal to the sum of the timber and plating taken separately.' Hurst says that to find the breaking weight in the centre for such a beam the following formula may be used:—

$$\text{B.W.} = \frac{d^2}{\text{L}}(cb + 30t);$$

$t$ being the thickness of iron flitch in inches. Can you indicate the method of deriving Hurst's formula? I have used Mitchell's method of arriving at the strength of these beams before, and Mr. Drew's remarks on this subject make me think that I should be somewhat unwise if I used this method again."

In a flitched beam the flitches and the plate, being of different materials and only connected at intervals, do not act up to their full independent value, principally owing to the stiffness of the metal and the flexibility of the timber. On the other hand, the full value can only be got out of the plate by the timber preventing it from buckling. Mitchell's "Advanced Building Construction," p. 419, makes a Memel fir beam $11 \times 6$ with wrought-iron flitch plate $11 \times \frac{9}{16}$ safe to carry a distributed load of 7 tons over a 12ft. opening. By the ordinary formula $\text{W} = \frac{d^2}{\text{L}}(\text{c}b + 30t)$ which the writer adopts in his book on "The Practical Designing of Structural Ironwork," $\text{W}$ = breaking weight in cwts. in centre, $b$ = total breadth in inches, $d$ = depth in inches, $\text{L}$ = clear span in feet, $t$ = thickness of flitch plate in inches, $\text{c} = 3$ for Memel fir, and the 30 for wrought-iron would become 42 for mild steel. The factor of safety should be from 5 to 10, according to circumstances, 7 being a good average where timber is concerned. Then $\text{W} = \frac{11^2}{12}(3 \times 6\frac{9}{16} + 30 \times \frac{9}{16}) = 10{\cdot}1\,(19{\cdot}6875 + 16{\cdot}875) = 10{\cdot}1 \times 36{\cdot}5625 = 369{\cdot}28$, say 370 cwts., breaking weight in centre. Then

$$\frac{370 \times 2 \text{ for load distributed}}{20 \text{ cwt in } 1 \text{ ton} \times 7 \text{ factor of safety}} = 5{\cdot}3 \text{ tons}$$

safe load distributed. The formula is simply the well-known $\frac{\text{c}bd^2}{\text{L}}$, allowing 30 for the flitch plate against $\text{c}$ for the timber. Strictly, $b$ should be nett width of timber, but it is usually taken over all.

HENRY ADAMS.

### Moisture on Shop Window.

ALDERLEY EDGE.—ARCHITECT writes: "I send section (not reproduced) through a shop front. The windows get covered with steam unless the door (and fanlight over) are kept constantly open. The heating is by hot-water pipes, but these are rendered useless for comfort by the door having to be kept open. How could this be remedied?"

The collection of moisture on the window is due to the moist heated air from the inside being condensed by the glass chilled by the outside air. The remedy is to keep the glass cool inside, as happens when the door is open. A glass screen should be placed at the back of the window space so that the air inside the window has no connection with the shop, and ventilation gratings or holes made at top and bottom of the window in order that a current of cool air may pass inside the window so that there shall be little difference in the warmth of the outside and the inside.

## Obituary.

**The late Mr. Trevail.**—The jury returned a verdict of "suicide whilst temporarily insane."

**Mr. Stephen Cotton**, builder and contractor, of Rearsby, died recently at the age of seventy-one years.

**The late Mr. T. G. Shaw**, builder, of Stalybridge, left an estate of the gross value of £4,760.

**Mr. William Steeples**, the head of an old established firm of house painters and decorators, of Musselburgh, died recently at the age of sixty-three years.

## Builders' Notes.

**Messrs. R. Waygood & Co., Ltd.**, of Falmouth Road, London, S.E., have removed their Glasgow address to 116, Hope Street (the premises of the Liverpool and London and Globe Insurance Co.), where three of their electric passenger lifts have been fitted.

**The Isolation Hospital, Chiswick**, has been supplied by Messrs. E. H. Shorland & Brother, of Manchester, with their patent double-fronted Manchester stoves with descending smoke flues and Manchester grates.

**A Heating Contract.**—Messrs. Moorwood, Sons & Co. Ltd., Harleston Works, Sheffield, have secured by open tender an important contract amounting to £10,830 for engineering works in connection with the hot-water apparatus for Hammersmith Workhouse and Infirmary.

**Sprague Elevators.**—The Metropolitan Engineering Association, of 4, Queen Victoria Street, E.C., have been appointed sole representatives in the British Empire and Europe of the Sprague Elevator Co., of New York. The splendid work which the forty-eight Sprague elevators have done at the London "tube" stations is universally known. Sprague elevators now embody the very latest improvements in lift construction.

**The Westminster City Council**, having experienced inconvenience from the frequent opening of electric-light street boxes, desire that there shall be access to the boxes in certain streets only from midnight to 9 a.m., and in certain other streets from 8 p.m. to 10 a.m. The electric-lighting companies object. But at the hearing before the Board of Trade last week the parties agreed to confer on the matter.

**London Main Drainage.**—At last week's meeting of the L.C.C. the Main Drainage Committee recommended that the Works Department be entrusted with the construction of section B of the proposed new sewers between the Crossness outfall and Plumstead at a cost not exceeding £291,000. Colonel Rotton objected to the work being given to the Department straight away without tenders being asked, and alleged that a contractor would carry out the work for £50,000 less. An amendment to send the matter back was defeated by a large majority. The recommendation was then adopted.

**Plumbing for the Plumbers.**—At the half-yearly meeting of the National Association of Master Plumbers of Great Britain and Ireland, held in Sheffield last week, the president, Mr. T. A. Armitage, of Huddersfield, said their relations with the Operative Plumbers' Society remained very friendly, and common action would be taken with regard to the encroachment of others than plumbers into the domain of plumbing work. When heating engineers and others were introduced to do plumbing work it was high time some decided stand was taken by the trade.

**Birmingham Master-Builders' Association.**—The annual general meeting was held last Thursday. Mr. Albert S. Smith, president, said the relationship between masters and men had been good throughout the year, with the exception of the plasterers. With them, as with other branches, a code of working rules was drawn up and signed by masters and men. These rules applied over a radius of five miles; but the National Association of Operative Plasterers had sought during the year to extend the radius to 120 miles, under cover of a by-law of their own union. He thought this needed no comment from him to show its flagrant unfairness and one-sidedness. The Birmingham Master-Builders' Association had given notice to the operative plasterers to abolish the existing rules after April 1st next, and he hoped other towns would do the same.

**The Penrhyn Quarry Dispute** was settled last week by the capitulation of the remaining strikers. The majority of the old hands have been re-engaged.

**A Gigantic Proposal.**—Mr. Andrew Young, valuer to the L.C.C., proposed before the London Traffic Commission last Thursday that a new thoroughfare should be made, in continuation of the Holborn to Strand improvement, across the Thames, through Southwark, Bermondsey and Camberwell, to the Crystal Palace—a distance of about 6¾ miles. The cost would be £1,750,000 per mile.

**Building at Southport.**—The number of plans approved at Southport during the year shows an increase as compared with last year, principally in dwelling-houses. The number of buildings certified on completion, however, shows a considerable decrease. The following are the totals for the past four years:—1903, 325; 1902, 250; 1901, 342; and 1900, 365. Only 106 houses were certified, as against 149 the previous year.

**Building in Glasgow.**—Deacon-Convener Goldie, who presided at the annual meeting of the Building Trades' Exchange, Ltd., which marked the formal opening of the new premises of the company at 67, Hope Street, said he did not think that there had ever been anything in Glasgow approaching the briskness and the volume of the building trade during the last ten years. He found that within that period there had been erected, within the present boundaries of the city, house property capable of housing a population of 190,000 people. If they took into consideration the building going on in Govan and Partick, he thought they might safely say that they had provided for a population exceeding a quarter of a million. He thought they had fully met the demand, and, perhaps, as some of them might think, made a little headway. In a conversation with an official he was assured that there was a greater number of unlet houses in the city to-day than there was a year ago.

**The Sanitary Inspectors' Association** held a meeting at Carpenters' Hall last Saturday week, when the chairman, Mr. I. Young, chief sanitary inspector of Battersea, delivered the annual address. He expressed the hope that at an early date the obstacles in the way of there being one sanitary inspectors' association only for England and Wales would be overcome, and he added that Sir James Crichton-Browne had consented, at the unanimous wish of the council, to be their president for the ensuing year. The important question of the practical training of candidates for the office of sanitary inspector had, for several years, engaged the attention of the Association, but without, he regretted to say, any very encouraging results. At the Sanitary Institutes' Congress at Bradford last July he suggested that the only satisfactory remedy for the present state of affairs was the recognition by the Local Government Board of the appointment of assistant inspectors. While still of the same opinion, he considered there was also an excellent opportunity for this Association to show its interest in promoting the cause of public health and improving their *status* as sanitary inspectors, either by instituting on its own account a system of technical and practical training or by uniting itself for this purpose with the present recognized teaching bodies. The percentage of persons appointed to the office of inspector who entered upon their duties only partly fitted for the work was in this respect considerable. The council had appealed in vain for representation upon the Examination Board of Inspectors, and also upon that of the Sanitary Institute, but, so far as he was aware, they had never asked the first named body to appoint a member of this Association as one of its examiners.

## Electrical Notes.

### Art in Electric Wiring.

It is a curious thing that those who are responsible for the choice of fittings in the general artistic scheme of a public building or a private house are often content to leave the question of switches and other "protuberances" severely alone; one sees the most elaborate and beautiful creations of the fittings designer adorning a handsome room, and at the same time hideous fluted brass domes standing out from the walls on imitation walnut blocks, or white china sockets dotted about on the skirtings irrespective of the surroundings. This is certainly a case of saving the ship for a ha'porth of tar; when expensive fittings are bought, the extra cost of suitable repoussé switch and wall-socket plates is small. There are many beautiful designs for such plates on the market in copper, brass, bronze, armour-bright and other finishes.

### Electric Fire Alarms.

The recent trial at Glasgow of the May-Oatway fire-alarm system conclusively demonstrated the superiority of this invention over the sprinkler. To those who do not know, it may be explained that the May-Oatway apparatus comprises a copper wire stretched between two fixed points on a strip of iron. In the centre of the wire there is suspended a piece of carbon into a fixed glass tube having at its base two contacts connected with the alarm. When the temperature rises beyond a predetermined point, the wire expands, and the carbon is dropped between the contacts—thus giving the alarm. The excellence of the system is that the area of the iron strip is calculated to such a nicety that with a gradual rise of temperature due to, say, advent of summer, the iron expands at the same rate as the copper and the position of the carbon is thus compensated for. With a sudden rise of temperature, however, the copper expands more quickly than the iron can. It is possible to fix the point of contact to any desired percentage above normal temperature, and thus the system is suitable for all kinds of situations, such as works, mills, &c. At the test in question the electric alarm sounded 1 min. 4 secs. after the fire was lighted, and the fire brigade arrived 3 mins. 45 secs. later. The sprinkler installation only started ejecting air after 11 mins. 32 secs., and the water did not come for some minutes later. The May-Oatway system is so simple and effective that it is a wonder it has not been universally adopted; but it takes a long time to get Englishmen to adopt anything new.

### Telephones for Domestic Use.

The market is at present flooded with cheap telephones, mostly hailing from the Fatherland, for connecting direct to the ordinary electric-bell system of a private house. These cheap articles are only imitations of better made and more expensive telephones which have been on sale for some years without being adequately pushed. Great efforts are now being made by those who hold large stocks of the cheap telephones to dispose of them, as no doubt they do not bear a large margin of profit. Intending purchasers should, however, be on their guard, as the amount of work put into these instruments cannot possibly be productive of good results for any length of time. At first they will work fairly well, but after a certain amount of use and of "dusting" by servants, their efficiency becomes impaired, and then the householder who has had them installed is not favourably disposed towards those who persuaded him into the bargain. The idea of the telephone is excellent; but a fair price should be paid for the instruments, which will then give every satisfaction.

A.M.I.E.E.

## Bankruptcies.

[Abbreviations: R.O.—receiving order; P.E.—public examination; C.C.—county court; O.R.—official receiver; Adj.—Adjudication.]

During the week ending Nov. 13th fifteen failures in the building and timber trades in England and Wales were gazetted.

W. Edgar, builder, Port Talbot. Adj. Nov. 3rd.

J. H. Collett, builder, Birmingham. Adj. Nov. 4th.

F. J. Dell, decorator, Warrington. R.O. Nov. 4th.

McRae & Co., civil engineers, London, E.C. Adj. Nov. 4th.

C. E. Bassington, builder, London, W. P.E., Bankruptcy Court, Dec. 16th, at 11.30.

Mordecai Brothers, builders, Tottenham. P.E., Edmonton C.C., Nov. 23rd, at 11.30.

H. W. Atherton, surveyor, Bolton. P.E., Bolton C.C., Nov. 25th, at 3.

J. R. Williams & Co., builders, Morriston. R.O. Nov. 4th.

T. H. Dutton, stonemason, Northwich. P.E., Crewe Court Room, Nov. 27th, at 11.

G. Mitchell, stone merchant, Portland. P.E., Dorchester County Hall, Nov. 27th, at 12.30.

R. Smith, builder, Dunston. P.E., Newcastle-on Tyne C.C., Nov. 26th, at 11.

J. Slater & Son, builders, Newcastle-on-Tyne. Adj. Nov. 5th.

Wells & Son, builders, Wisbech. First meeting, Rose and Crown, Wisbech, Nov. 19th, at 11.30. P.E., King's Lynn C.C., Dec. 10th, at 10.

W. Bing, builder, Sandwich. R.O. Nov. 4th. First meeting, O.R.'s, Canterbury, Nov. 19th, at 9.15. P.E., Canterbury Guildhall, same day, at 10.

Atkin, Burrell & Co., builders, Newcastle-on-Tyne. First meeting, O.R.'s, Newcastle, Nov. 18th, at 11.30. P.E., Newcastle C.C., Nov. 26th, at 11.

H. G. Wass, builder, Thorneywood. First meeting. O.R.'s, Nottingham, Nov. 18th, at 12. P.E., Nottingham C.C., Dec. 4th, at 12.

F. O'Donnell, builder, Leeds. First meeting, O.R.'s, Leeds, Nov. 18th, at 11.30. P.E., Leeds C.C., Nov. 24th, at 11.

A. Fairhead, builder, Westcliff-on-Sea and Walthamstow. First meeting, Bankruptcy Court, London, Nov. 2[illegible]th, at 1. P.E., same, Dec. 1[illegible]th, at 11.30.

E. W. Islip, builder, 174, Corporation Street, Selly Park. First meeting, Birmingham, Nov. 18th, at 12. P.E., Birmingham C.C., Dec. 9th, at 2

W. H. Waterman, architect, London, E.C. R.O. Nov. 5th. First meeting, Bankruptcy Court, Nov. 18th, at 11. P.E., same, Dec. 15th, at 11.30.

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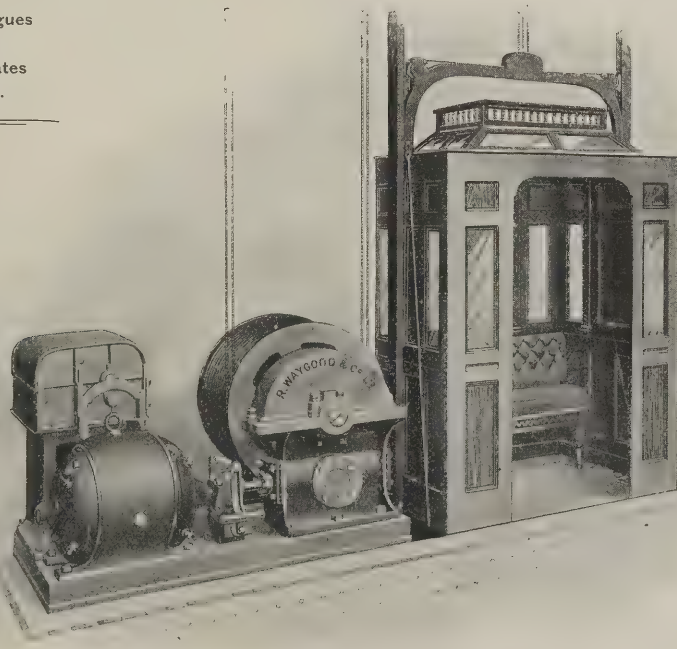

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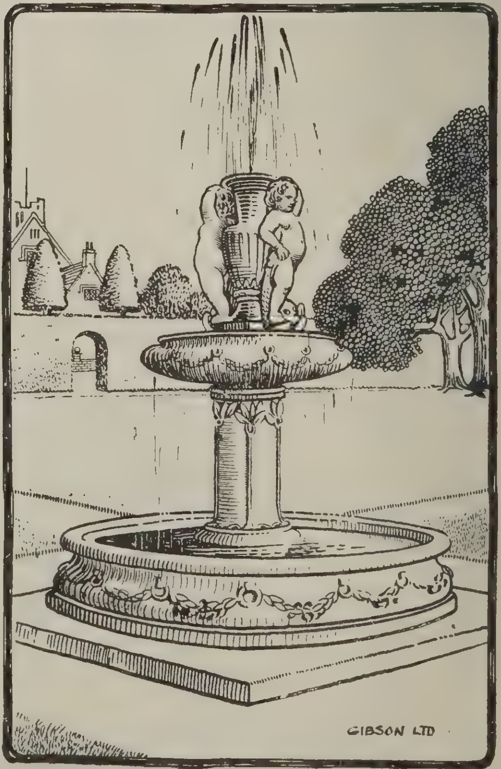

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# Trade and Craft.

### Expanded Metal.

A great deal has been said and written about the many uses and adaptations of expanded metal, but we have never yet seen them so succinctly described and illustrated as in the book published by The New Expanded Metal Co, Ltd., of York Mansion, York Street, Westminster, S.W. Unfortunately it is not uncommon to find very incomplete and one-sided statements in the publications of trade firms, so that one has become rather chary of their trustworthiness: in this present book, however, no such feeling is engendered; it is a book of facts about the history of expanded metal in construction, supplemented by the results of many careful tests and the experiences of many engineers and architects of repute. That, we venture to think, is one of the best methods of introduction which any firm can adopt; and when, in addition, some dozens of photographic illustrations are given of large and important buildings constructed on the system under notice, we can only feel thoroughly impressed and satisfied by its excellence. As pointed out in these pages, Jean Monier, a gardener living near Paris, is generally credited with the invention of reinforced concrete construction, in 1876, using iron rods to take the tensile stresses. This system necessarily entailed considerable trouble in forming the skeleton which was to be bound together in the surrounding concrete. It therefore occurred to Mr. John F. Golding that metal sheets pressed out in the form of meshes would avoid this disadvantage. The application of such sheets to building construction proved eminently satisfactory, and with so many examples all over the country, there is no need to emphasize how serviceable it is found for the many applications to which it is adapted. We have not the space to fully describe any of the tests so clearly set forth in this book, but we cannot pass them by without referring to one made at Glasgow with an expanded steel and concrete slab 15ft. square in the clear, supported at each end on dwarf walls 3ft. high, the slab being 7in. thick, with one layer of expanded metal on the underside. The committee of experts who superintended the test—Mr. A. T. Walmisley, Mr. J. P. Allen and Mr. Home Morton—pointed out that the slab formed a good example of an ordinary marketable floor which any contractor could execute, and hence the breaking load (5 cwts. per ft. super.) may be accepted as reliable data; allowing a factor of safety of 4, this gives a safe working load of $1\frac{1}{4}$ cwts. per ft. super. We think architects will find this book of great use to them, for it contains a vast amount of accurate information about a system of construction which is coming more and more into favour; the uses of which are being extended from house building to bridges, sewers, water-softening tanks, sewage tanks, &c., &c.

# Complete List of Contracts Open.

| DATE OF DELIVERY. | WORK TO BE EXECUTED. | FOR WHOM. | FROM WHOM FORMS OF TENDERS MAY BE OBTAINED. |
|---|---|---|---|
| | **BUILDING:** | | |
| Nov. 19 | Glasgow—Library | Corporation | J. S. Stewart, 42 Bath Street Glasgow. |
| „ 19 | Houghton-le-Spring—Alterations to Union Offices | —— | J. G. Baty, Clerk, Union Offices, William Street, Houghton-le-Spring, R.S.O. |
| „ 19 | Manchester—Two Lodges | Corporation | City Architect, Town Hall, Manchester. |
| „ 19 | Manchester—Setting Back Gates, &c. | Improvement Committee | City Architect, Town Hall, Manchester. |
| „ 19 | Lindal-in-Furness—Branch Library | Urban District Council | W. Richardson, Surveyor, Council Offices, Dalton-in-Furness. |
| „ 19 | Nantwich—Infirmary | Guardians | C. E. Davenport, 152 Hospital Street, Nantwich. |
| „ 19 | Rydal—Alterations, &c. | —— | C. H. B. Cane, Rydal Estate Office, Ambleside. |
| „ 20 | Broadhembury—Stabling, &c. | Col. H. B. Gundry | Ellis, Son & Bowden, Surveyors, Bedford Chambers, Exeter. |
| „ 20 | Felixstowe—House | Admiralty | Director of Works Department, Admiralty, 21 Northumberland Avenue, W.C. |
| „ 20 | Newcastle-upon-Tyne—Alterations, &c, to School | Education Committee | A. Goddard, Secretary, Education Offices, Northumberland Road, Newcastle-upon-Tyne |
| „ 20 | Dublin—Cement | Commissioners of Irish Lights | O. Armstrong, Secretary, Irish Lights Office, D'Olier St., Dublin |
| „ 20 | Portsmouth—School | Education Committee | G. E. Smith, 145 Victoria Road N., Southsea. |
| „ 20 | Blackpool—Parish Church | Building Committee | F. H. Gorst, 7 Birley Street, Blackpool. |
| „ 21 | Hindley, Lancs—Wall | Urban District Council | A. Holden, Surveyor Council Offices, Hindley |
| „ 23 | London, N.—School Works | Tottenham Education Committee | G. E. T. Laurence, 23 Buckingham Street, Adelphi. W.C. |
| „ 23 | Droxford, Hants—Repairs to Master's House | Guardians | F. Clark, Clerk, Bishop's Waltham. Droxford, Hants. |
| „ 23 | Sheffield—Shops and Artizans' Dwellings | Surplus Lands Committee | Gibbs & Flockton, 5 St. James's Row, Sheffield. |
| „ 23 | Elgin—Villa | —— | R. B. Pratt, Architect, Town and County Bank Buildings, Elgin. |
| „ 23 | Glasgow—Lime, Slates, Bricks, Chimney Pots, &c. | Caledonian Railway Co. | J. Lorimer, Stores Superintendent, Charles St., St. Rollox Glasgow |
| „ 23 | Glyn Neath, Wales—Rebuilding Wall, &c. | —— | J. S. Thomas, Secretary, Stanley House, Glyn Neath. |
| „ 23 | Keighley—Alterations, &c., to School | School Board | W. Bailey, Architect Tanfield Buildings, Market Street, Bradford. |
| „ 23 | West Hartlepool—Lime and Cement | Corporation | Borough Engineer, West Hartlepool. |
| „ 23 | Thornhill, Yorks—Walls, &c. | Urban District Council | S. W. Parker, Surveyor, Council Offices, Thornhill, Yorks. |
| „ 23 | Birmingham—University Buildings Superstructure, &c. | —— | Aston Webb & E. I. Bell 19 Queen Anne's Gate, S.W. |
| „ 24 | Aranmore, Ireland—Coastguard Station, &c. | —— | District Office of Public Works, Londonderry. |
| „ 24 | Sunderland—Offices | —— | F. E. Coates, 41 Fawcett Street, Sunderland. |
| „ 24 | Burton-upon-Trent—Fireclay Retorts, Bricks, &c. | Gas & Electric Light Committee | F. L. Ramsden, Engineer, Gasworks, Burton-upon-Trent. |
| „ 25 | Dublin—Cement, Firebricks, Clay, &c. | Great Southern and Western Railway (Ireland) Co. | F. B. Ormsby, Kingsbridge Terminus, Dublin. |
| „ 25 | Exmouth—General Builders' Work | Urban District Council | S. Hutton, Surveyor, Public Hall Chambers, Exmouth. |
| „ 25 | Bootle, Liverpool—Post Office | Commissioners of H.M. Works, &c | Secretary, H.M. Office of Works, &c., Storey's Gate, S.W. |
| „ 25 | London, S.W.—Terra-cotta Bandstand | Fulham Borough Council | F. Wood, Borough Engineer, Town Hall, Fulham, S.W. |
| „ 25 | London, N—Cottage, Lavatories, &c. | Finchley U.D.C. | Council's Surveyor, Council Offices, Finchley, N. |
| „ 25 | Sandown—Hall-Keeper's House and Additions to Town Hall | Town Council | Surveyor, Town Hall, Sandown. |
| | **ENGINEERING:** | | |
| Nov. 20 | Wednesbury—Electric Lighting | Corporation | F. J. Warden-Stevens, 34 Victoria Street, Westminster, S.W. |
| „ 21 | Edinburgh—Electrical Wiring, &c. | Lord Provost, Magistrates, &c., Council. | Resident Electrical Engineer, Dewar Place, Edinburgh. |
| „ 23 | Rochford—Water Supply Works | Rural District Council | H. T. Sidwell, Council's Engineer, Rochford, Essex. |
| „ 23 | Kirkcaldy—Steam-Engine and Dynamo | Corporation | O. F. Francis, Tramway Manager, Electricity Works, Victoria Road, Kirkcaldy. |
| „ 23 | Swindon—Switchboards, &c. | Corporation | Lacey & Sillar, 78 King Street, Manchester. |
| „ 23 | Glasgow—Electric Lighting Material and Fittings | Caledonian Railway Co. | J. Lorimer, Stores Superintendent, Caledonian Railway, Charles Street, St. Rollox, Glasgow. |
| „ 23 | Egremont, Cheshire—Punching and Shearing Machine | Wallasey U.D.C. | Ferries, Manager, Egremont Ferry, Cheshire. |
| 23 | Dublin—Culvert | Gt. Northern Rly. Co. (Ireland) | W. H. Mills, Engineer-in-Chief, Amiens Street Terminus, Dublin. |
| „ 25 | Horwich, Lancs—Reservoir, &c. | Urban District Council | P. Taberner, Clerk, Council Offices, Horwich. |
| „ 25 | Birmingham—Storm-water Culverts, &c. | Public Works Committee | J. Price, City Engineer, Council House, Birmingham. |
| „ 25 | London, S.W—Tug | Admiralty | Secretary, Admiralty, Whitehall, S.W. |
| 25 | London, S.W.—Iron Bandstand | Fulham Borough Council | F. Wood, Borough Engineer, Town Hall, Fulham, S.W. |
| „ 30 | Dublin—Electrical Supplies | Dublin United Tramways Co. | R. S. Tresilian, Secretary, 9 Upper Sackville Street. Dublin. |
| „ 30 | Brandon, Suffolk—Waterworks | Rural District Council | H. Walker & Son, Civil Engineers, Albion Chambers, King Street, Nottingham. |
| „ 30 | Palencia, Spain—Waterworks | —— | Commercial Intelligence Branch, Board of Trade, 50 Parliament Street, S.W. |
| „ 30 | London, N.—Electrical Meters, &c. | Urban District Council | N. Staniland, Resident Electrical Engineer, Electricity Works, Tottenham Lane, Hornsey. |
| „ 31 | Sowerby Bridge, Yorks—Trade Effluent Purification Works | Asquith Bottom Dyeworks | Spinks & Pilling, 20 Park Row, Leeds. |
| Dec. 1 | Windsor—Public Lighting of Town | Town Council | Town Clerk, 3 Park Street, Windsor. |
| „ 1 | Colombo, Ceylon—Electricity Supply | Ceylon Government | Commercial Intelligence Branch, Board of Trade, 50 Parliament Street, S.W. |
| „ 1 | London, N.—Alterations to Hot-water Supply Apparatus | Metropolitan Asylums Board | T. D. Mann, Secretary, Board's Offices, Embankment, E.C. |
| „ 7 | Park Royal, near Acton—Electrical Plant | Great Western Railway Co. | Kennedy & Jenkin, 17 Victoria Street, Westminster, S.W. |
| „ 7 | Brighton—Power Station Plant | Town Council | A. Wright, Star Chambers, 30 Moorgate Street, E.C. |
| „ 15 | New York, U.S.A.—Tunnels | Pennsylvania, New Jersey & New York Railway Co. | Chief Engineer, 20 West Thirty-fourth Street, New York City, New York State, U.S.A. |
| 15 | New York, U.S.A.—Tunnels under North River | Pennsylvania, New York & Long Island Railway Co. | Chief Engineer, 20 West Thirty-fourth Street, New York City, New York State, U.S.A. |
| | **FURNITURE:** | | |
| Nov. 19 | Downpatrick—Bedsteads | Down District Lunatic Asylum | S. Rea, Clerk, Asylum, Downpatrick. |
| „ 19 | Swansea—Furniture, &c. | Guardians | R. C. Jenkins, Clerk, Union Offices, Alexandra Road, Swansea. |
| „ 20 | Glasgow—Furniture | Caledonian Railway Co. | J. Lorimer, Stores Superintendent, Caledonian Railway, Charles Street, St. Rollox, Glasgow. |
| „ 27 | Southampton—Desks for New Corn Market | Corporation | J. A. Crowther, Borough Engineer, Municipal Offices, Southampton. |

# Complete List of Contracts Open —*continued*

| DATE OF DELIVERY. | WORK TO BE EXECUTED. | FOR WHOM. | FROM WHOM FORMS OF TENDERS MAY BE OBTAINED. |
|---|---|---|---|
| | **IRON AND STEEL:** | | |
| Nov. 20 | Dublin—Ironmongery, Castings, &c. | Commissioners of Irish Lights | Owen Armstrong, Sec. Irish Lights Office, D'Oliver Street, Dublin. |
| „ 20 | Witton, Birmingham—Bolts, Nuts, &c. | Messrs. Kynoch, Ltd. | Secretary, Kynoch, Ltd., Witton, Birmingham. |
| „ 20 | Glasgow—Iron and Steel | Caledonian Railway Co. | J. Lorimer, Stores Superintendent, Caledonian Railway, Charles Street, St. Rollox, Glasgow. |
| „ 23 | West Hartlepool—Stores | Corporation | Borough Engineer. West Hartlepool. |
| „ 23 | Buxton—Pipes | Urban District Council | G. H. Hill & Sons, 3 Victoria Street, Winchester. |
| „ 24 | London, E.C.—Phosphor Bronze and Metals | Southern Mahratta Rly. Co., Ltd. | E. L. Thornton, 46 Queen Ann's Gate, Westminster, S.W. |
| „ 25 | Exmouth—Railway Stores | Urban District Council | S. Hutton, Surveyor. Public Hall Chambers, Exmouth. |
| „ 25 | Dublin—Railway Stores | Gt. Southern & Western Railway (Ireland) Co. | Storekeeper, General Stores, Inchicore, Dublin |
| „ 27 | Warrington—Railway Stores | Cheshire Lines Committee | S. S. Barton, Stores Superintendent, Cheshire Lines, Warrington. |
| „ 28 | Swansea—Iron and Steel | Harbour Trustees | Engineer, Harbour Office, Swansea. |
| „ 30 | Dublin—Railway Stores | United Tramways Co. | R. S. Tresilian. 9 Upper Sackville Street, Dublin. |
| „ 30 | Thornton, near Poulton-le-Fylde, Lancs—Pipes | Sewerage Committee | A. Hindle, 44 Abingdon Street, Blackpool. |
| „ 30 | Dublin—Railway Stores | Midland Great Western Rly. Co. of Ireland. | General Stores Department, Broadstone Station, Dublin. |
| | **PAINTING AND PLUMBING:** | | |
| Nov. 20 | Dublin—Coppersmith and Plumbing Work | Commissioners of Irish Lights | Owen Armstrong Sec., Irish Lights Office, D'Olier Street, Dublin. |
| „ 23 | Glasgow—Painting and Plumbing | Caledonian Railway Co. | J. Lorimer, Stores Superintendent, Caledonian Railway, Charles Street, St. Rollox. Glasgow |
| „ 25 | Exmouth—Oils and Paints | Urban District Council | S. Hutton, Surveyor, Public Hall Chambers, Exmouth. |
| „ 25 | Dublin—Varnishes, Colours, &c. | Gt. Southern & Western Railway (Ireland) Co. | F. B. Ormsby, Secretary, Kingsbridge Terminus, Dublin. |
| „ 27 | Warrington—Oils, White Lead, Lead Sheet and Piping, &c. | Cheshire Lines Committee | S. S. Barton, Stores Superintendent, Cheshire Lines, Warrington. |
| „ 30 | Dublin—Varnish, Paints, Oil, &c. | Midland Great Western Rly. Co. of Ireland. | General Stores Department, Broadstone, Station, Dublin. |
| „ 30 | Dublin—Paints, Oils, Glass, &c. | Dublin United Tramways Co. | R. S. Tresilian, 9 Upper Sackville Street, Dublin. |
| | **ROADS AND CARTAGE:** | | |
| Nov. 19 | Annan, Scotland - Road Metal | District Committee | A. V. Hart, Road Surveyor, Ashgrove, Dumfries |
| „ 19 | Manchester—Street Works | Paving, Sewering and Highways Committee. | Paving Department, Surveyor's Office, Town Hall, Manchester. |
| „ 20 | Crompton, near Oldham—Granite Setts | Urban District Council | F. Wild, Surveyor, Council Offices, Crompton, near Oldham. |
| „ 20 | Epsom—Granite | Urban District Council | E. R. Capon, Surveyor, Bromley Hurst, Church Street, Epsom. |
| „ 20 | Havod, Rhondda Valley, Wales—Roads, &c. | Lewis-Merthyr Consolidated Collieries, Ltd. | James & Morgan, Architects, Charles Street Chambers, Cardiff. |
| „ 21 | Chelmsford—Paving, &c. | Essex C.C. | P. J. Sheldon. Chief Surveyor, Chelmsford. |
| „ 21 | Cheriton. Kent—Road Making | Urban District Council | Surveyor, Public Offices. Cheriton, Kent. |
| „ 21 | Southend-on-Sea—Footway, Paving, &c. | Essex C.C. | P. J. Sheldon, Chief Surveyor, Chelmsford. |
| „ 23 | West Hartlepool—Paving Setts, &c. | Corporation | Borough Engineer, West Hartlepool. |
| „ 23 | Ilford—Leveling, &c. | Urban District Council | H. Shaw, Surveyor, Town Hall. Ilford. |
| „ 23 | Exmouth—Hire of Horses, Carts and Men | Urban District Council | Surveyor, Public Hall Chambers, Exmouth. |
| „ 24 | West Ham—Street Works | Borough Council | J. G. Morley, Borough Engineer, Town Hall, West Ham, E. |
| „ 25 | Hampton Wick—Flints | Urban District Council | H. Fawsett, Clerk, Council Offices, High Street. Hampton Wick. |
| „ 25 | Erdington, near Birmingham—Stone | Urban District Council | H. H. Humphries, Surveyor, Public Hall, Erdington, near Birmingham. |
| „ 26 | London, W.—Road Making | Urban District Council | C. Jones, Borough Engineer, Town Hall, Ealing, W. |
| „ 26 | Birmingham—Material | Warwickshire County Council | J. Wilmot, County Surveyor, Birmingham. |
| „ 28 | St. Annes-on-Sea, Lancs—Street Works | Urban District Council | Surveyor, South Drive, St. Annes-on-Sea, Lancs. |
| „ 30 | Leeds—Levelling, &c. | Rural District Council | E. J. Silcock, 10 Park Row, Leeds. |
| „ 30 | Dublin—Flags, &c. | Midland Great Western Rly. Co. of Ireland. | General Stores Department, Broadstairs Station, Dublin. |
| Dec. 1 | London, E.C.—Paving | Corporation | Engineer, Public Health Department, Guildhall, E.C. |
| 1904. Jan. 19 | Rotherhithe and Radcliffe—Carriageway | London County Council | Engineer's Department, County Hall, Spring Gardens, S W. |
| | **SANITARY:** | | |
| Nov. 20 | Marchiwel near Wrexham—Sanitary Works | Sanitary Works | J. P. Evans, Architect, Argyle Chambers, Wrexham. |
| „ 20 | Seisdon, Wolverhampton—Sewers, &c. | Rural District Council | R. E. W. Berrington, Bank Buildings, Wolverhampton. |
| „ 21 | New Malden—Sewers, &c. | Urban District Council | T. B. Simmons, Surveyor, Council Offices, Cambridge Road, New Malden. |
| „ 23 | Bury St. Edmunds—Sewage Works | Corporation | G. R. Strachan, 7 Victoria Street, Westminster, S.W. |
| „ 23 | West Hartlepool—Disinfectants, Sewer Pipes, &c. | Corporation | Borough Engineer, West Hartlepool. |
| „ 23 | Hastings - Sewers, &c. | Corporation | P. H. Palmer, Borough Engineer, Town Hall, Hastings. |
| „ 24 | Belper—Sewage Outfall Works | Urban District Council | C. J. Lomax, 37 Cross Street, Manchester. |
| „ 25 | Wanstead—Scavenging, &c. | Urban District Council | Clerk, Council Offices, Wanstead, N.E. |
| „ 25 | Dublin—Sewer Pipes, &c. | Gt. Southern and Western Railway (Ireland) Co. | Storekeeper, General Stores, Inchicore, Dublin. |
| „ 25 | Exmouth—Pipes, &c. | Urban District Council | S. Hutton, Surveyor, Public Hall Chambers, Exmouth. |
| „ 25 | Bettws-y-Coed, Wales—Sewer, &c. | Urban District Council | R. R. Owen, Clerk, Union Offices, Llanrwst. |
| „ 26 | West Wylam, Northumberland—Sewage Works | Rural District Council | J. E. Parker, Post Office Chambers, Newcastle-on-Tyne. |
| „ 27 | Lichfield, Staffs—Sewerage Works | Corporation | Elliott & Brown, Engineers, Burton Buildings, Parliament Street, Nottingham. |
| „ 27 | Warrington—Drain Pipes, &c. | Cheshire Lines Committee | S. S. Barton, Stores Superintendent. Cheshire Lines, Warrington. |
| „ 30 | Thornton, near Poulton-le-Fylde, Lancs—Sewerage Works | Sewerage Committee | A. Hindle, 44 Abingdon Street, Blackpool. |
| | **TIMBER:** | | |
| Nov. 20 | Dublin—Planks, Deals, &c. | Commissioners of Irish Lights | O. Armstrong, Secretary, Irish Lights Office, D'Olier St., Dublin. |
| „ 20 | Witton, Birmingham—Timber, &c. | Kynoch. Ltd. | Secretary, Kynoch, Ltd., Witton, Birmingham. |
| „ 25 | Exmouth—Timber | Urban District Council | S. Hutton, Surveyor, Public Hall Chambers, Exmouth. |
| „ 27 | Warrington—Sleepers, &c. | Cheshire Lines Committee | S. S. Barton, Stores Superintendent, Cheshire Lines, Warrington. |
| „ 28 | Swansea—Timber | Harbour Trustees | Engineer, Harbour Office, Swansea. |
| „ 30 | Copenhagen—Timber, &c. | Danish State Railways | Office of Locomotive Department (3 Sal), G. C. Kongevej, 1, D, Copenhagen. |
| „ 30 | Dublin—Timber, &c. | Midland Great Western Rly. Co. of Ireland. | General Stores Department, Broadstone Station, Dublin. |
| „ 30 | Dublin—Timber | Dublin United Tramways Co. | R. S. Tresilian, 9 Upper Sackville Street, Dublin. |
| 1904. Dec. 1 | Natal—Sleepers | Government of Natal | Agent-General for Natal, Natal Government Agency, 26 Victoria Street, Westminster. |

# List of Competitions Open.

| DATE OF DELIVERY. | DESIGNS REQUIRED. | AMOUNT OF PREMIUM. | DEPOSIT REQUIRED FOR CONDITIONS, &C. | BY WHOM ADVERTISED |
|---|---|---|---|---|
| Nov. 21 | Sunderland—Additions & Alterations to Town Hall | £100, £50, £25. | £5. | J. W. Moncur, Borough Engineer, Town Hall, Sunderland. |
| „ 30 | Bray—Pavilion and Winter Gardens | £30, £15, £10, and 3 prizes of £5 5s. each. | —— | F. Bethell, E. Lee and P. MacDonnell, Hon. Secretaries, Town Hall, Bray. |
| Dec. 1 | Wakefield—Reconstruction of Cattle Market | £52 10s., £26 5s. | £2. | E. R. Langhorne, Clerk to Governors of Charities, Wakefield. |
| „ 7 | Elgin—School Buildings (340 pupils) | —— | —— | H. Stewart, Clerk, Landward School Board, Elgin. |
| „ 7 | Seily Oak, near Birmingham—Public Baths | —— | £1 1s. | A. W. Cross, 23 Valentine Road, King's Heath, near Birmingham. |
| „ 16 | Lambeth, S.E.—Public Library | —— | —— | H. J. Smith, Clerk, Town Hall, Kennington Green, S.E. |
| 1904 Jan. 15 | Windsor—Police and Fire Brigade Stations | £26 5s. | £1. | E. A. Stickland, Borough Surveyor, Town Council Offices, Windsor. |
| Feb. 1 | Erdington—New Council House & Free Library | £50, £30, £20. | £1 1s. | H. H. Humphries, District Engineer, Public Hall, Erdington, Birmingham. |
| Mar. 31 | Vienna—Machinery to Lift Boats on Canal | 100,000, 75,000 & 50,000 kronen. | —— | Austro-Hungarian Consulate-General, 22 Laurence Pountney Lane, E.C. |
| No date | Fraserburgh, Scotland—Hospital, &c. | —— | —— | W. Alexander, Burgh Surveyor, Fraserburgh. |
| „ | Rochdale—School (Limited to Local Architects) | —— | —— | J. E. Holden, Secretary to Education Committee, Baillie St., Rochdale. |

# Tenders.

*Information from accredited sources should be sent to "The Editor" at latest by noon on Monday if intended for publication in the following Wednesday's issue. Results of Tenders cannot be accepted unless they contain the name of the Architect or Surveyor for the work.*

*Addressed postcards on which lists of tenders may be stated will be sent post free on application to the Manager,* BUILDERS' JOURNAL, 6, *Great New Street, Fetter Lane, E.C.*

**Canterbury.**—For the construction of detritus and septic tanks, together with other contingent works at the sewage farm, Sturry Road, for the Drainage Committee:—

| | | | |
|---|---|---|---|
| T. T. Denne, Walmer | £4,100 | 0 | 0 |
| F. W. Trimm, Dorking | 3,978 | 0 | 0 |
| Davies, Ball & Co., Bromley | 3,620 | 0 | 0 |
| H. Roberts, West Bromwich | 3,502 | 0 | 0 |
| H. J. Smith, Maidstone | 3,352 | 0 | 0 |
| J. & T. Binns, Croydon | 3,253 | 13 | 0 |
| Wilkinson Brothers, London | 3,162 | 0 | 0 |
| Amos & Foad, Whitstable | 2 995 | 0 | 0 |
| R. H. B. Neal, Plymouth | 2,983 | 0 | 0 |
| A. G. Osenton, Reading | 2,982 | 1 | 5 |
| W. J. Adcock, Canterbury | 2,886 | 0 | 0 |
| G. Browning, Canterbury | 2,876 | 0 | 0 |
| G. Rutter, Barry | 2,813 | 3 | 11 |
| G. Bell, London | 2,810 | 0 | 0 |
| Turner & Co., Deal | 2,800 | 0 | 0 |
| Gann & Co., Whitstable | 2,779 | 0 | 9 |
| B. Cooke & Co., London | 2,617 | 0 | 0 |
| W. L. Wallis & Co.,* East Side Road, Eastbourne | 2,369 | 16 | 7 |

* Accepted.

**Canterbury.**—For the construction of a 33in. cast-iron trunk sewer, about 1,860 yds. in length, together with manholes and other contingent works, to be laid under St. Stephen's and Broad Oak Roads, for the Drainage Committee:—

| | | | |
|---|---|---|---|
| Gann & Co., Whitstable | £11,255 | 0 | 0 |
| Turner & Co., Deal | 11,000 | 0 | 0 |
| J. W. Dean, Ltd., Margate | 10,162 | 18 | 0 |
| F. W. Trimm, Dorking | 9,972 | 0 | 0 |
| R. H. B. Neal, Plymouth | 9,951 | 0 | 0 |
| H. Roberts, West Bromwich | 9 084 | 0 | 0 |
| Amos & Foad, Whitstable | 8,860 | 0 | 0 |
| Davies, Ball & Co., Bromley | 8,800 | 0 | 0 |
| G. Bell, Tottenham | 8,661 | 0 | 0 |
| A. G. Osenton, Reading | 8,352 | 18 | 6 |
| W. L. Wallis & Co., Eastbourne | 8,162 | 16 | 8 |
| J. & T. Binns, Croydon | 7,971 | 8 | 0 |
| Wilkinson Brothers, Finsbury Park, N. | 7,271 | 0 | 0 |
| B. Cooke & Co.,* 16, Victoria Street, S.W. | 7,257 | 0 | 0 |
| G. Rutter, Barry, near Cardiff | 7,245 | 5 | 5 |

* Accepted.

**Hounslow.**—For the erection of the first block of six shops, and flats over, in High Street, Hounslow. Mr. W. A. Davies, A.M.I.C.E., architect, Town Hall Chambers, Hounslow. Quantities supplied:—

| | |
|---|---|
| J. Macklin, Hanwell | £9,999 |
| Jones Brothers, Tooting | 8,712 |
| T. Hiscock, Hounslow | 8,618 |
| C. Emmett, Hounslow | 8,550 |
| Wisdom Brothers, Isleworth | 8,300 |
| A. & B. Hanson, Southall | £8,194 |
| Leslie & Co., Kensington | 8 147 |
| Sheffield Brothers, Balls Pond, N. | 8,100 |
| J. Ferguson & Co., Holborn | 8,045 |
| E. Plaistowe, Southall | 7,859 |
| W. Irwin,* Islington | 7,455 |

* Accepted. [Architect's estimate, £8,000.]

**London, W.**—For the extension of the boiler-house at their workhouse, Harrow Road, W., for the Paddington Board of Guardians. Mr. F. J. Smith, F.R.I.B.A., architect, Parliament Mansions, Victoria Street, S.W.:—

| | | |
|---|---|---|
| T. Holloway, Gower Street, W.C. | £6,519 | 12 |
| H. H. Hollingworth, Peckham | 6,473 | 0 |
| General Builders, Ltd., Notting Hill | 6,398 | 0 |
| R. H. B. Neal, Plymouth | 6,280 | 0 |
| Abbott & Herbert, Acton | 6,200 | 0 |
| Stimpson & Co., Brompton Road, S.W. | 6,195 | 0 |
| Patman & Fotheringham, Theobald's Road, W.C. | 6,130 | 0 |
| H. Roffey, Putney | 6,100 | 0 |
| G. Newton, Southwark Bridge Road | 6,025 | 0 |
| W. Lawrence & Son, Waltham Cross | 5,993 | 0 |
| J. Ivory, Great Cambridge Street, E. | 5,987 | 10 |
| G. Godson & Son, Kilburn Lane | 5,986 | 0 |
| F. G. Minter, Putney | 5,980 | 0 |
| Dearing & Son, Halliford Street, N. | 5,971 | 0 |
| J. Ferguson & Co., Holborn | 5,900 | 0 |
| B. E. Nightingale, Albert Embankment | 5,840 | 0 |
| J. Appleby & Sons,* Cornwall Works, Lambeth | 5,794 | 0 |

* Accepted.

**London, N.W.**—For the extension of the new infirmary in Acton Lane, Willesden Junction, N.W., for the guardians of Willesden parish. Mr. Alfred Saxon Snell, F.R.I.B.A., architect. Quantities by Messrs. Northcroft, Son & Nicholson:—

| | |
|---|---|
| H. Somerford & Son, Clapham, S.W. | £5,629 |
| A. & B. Hanson, Southall | 5,278 |
| Kerridge & Shaw, Cambridge | 5,263 |
| C. G. Hill, Queen Street, Cheapside | 5 230 |
| Cowley & Drake, Willesden Green | 5,221 |
| Leslie & Co., Kensington Square, W. | 5,153 |
| W. Lawrence & Son, Waltham Cross, N. | 5,149 |
| J. Ferguson & Co., Birkbeck Bank Chambers | 5,120 |
| W. Reason, Rosebery Avenue, E.C. | 4,937 |
| E. Chamberlain, Addlestone, Surrey | 4,965 |
| J. Appleby & Sons, Lambeth | 4,947 |
| G. Godson & Sons,* Pembroke Works, Kilburn Lane, W. | 4,930 |

* Accepted.

**London, W.**—For the erection of shops and residential flats, Uxbridge Road. Messrs. Palgrave & Co., architects, Victoria Mansions, 28, Victoria Street, Westminster, S.W. Quantities by Mr. George Stephenson, 14, Queen Victoria Street, S.W.:—

| | Bath Stone. | Terra-Cotta. |
|---|---|---|
| J. W. Dean, 51, Ramsgate Road, Margate | £21,000 | £21,000 |
| Kellett & Sons, Ltd., Old Oak Wharf, Willesden | 20,025 | 19,750 |
| Chessum & Sons, Crown Wharf, Bow | 19,625 | 19,625 |
| J. Ferguson & Co.,* 410, Birkbeck Bank Chambers, Holborn, W.C. | 18,973 | 18,823 |
| Leslie & Co., Kensington | 18,861 | 18,861 |
| H. L. Holloway, Church Street, Deptford | 18,763 | 18,823 |

* Received too late for consideration.

**St. Columb (Cornwall).**—For alterations and additions to the workhouse and new drainage works. Messrs. J. Ennor & Son, architects, Newquay:—

| | |
|---|---|
| W. S. Tippett, Newquay | £2,725 |
| C. Payne, Plymouth | 2,630 |
| C. Carrwick,* Newquay | 2,035 |
| W. S. Hooper (drainage), St. Agnes | 320 |
| J. Penberthy* (sanitary fittings), Newquay | 185 |

* Accepted.

# New Companies.

J. H. BARRATT & Co., LTD., manufacturers of tiles, plaques, slabs, &c. Capital: £4 000 in £1 shares.

WHATLEY & Co., LTD., auctioneers, estate agents surveyors, architects, &c. Capital: £3,000 in £1 shares.

STONEY LANE BRICK Co., LTD., Brinsley, Nottingham, manufacturers of and dealers in bricks, tiles, pipes, pottery, &c. Capital: £15,000 in £10 shares.

CHARLES LOMAX, LTD., Ramsbottom, Lancs, builders and contractors, timber merchants, sawyers, plumbers, &c. Capital: £3,000 in £1 shares.

NOAH TURNER, LTD., West Bromwich, Staffs, dealers, &c., in gravel, sand, earth, clay, limestone, &c. Capital: £3,500 in £1 shares (500 deferred).

NORTH-EAST DERBYSHIRE BRICK Co., LTD., Barlborough and Spinkhill Brickyard, Derby, manufacturers of and dealers in bricks, tiles, pipes, pottery, &c. Capital: £20,000 in £10 shares.

BRADFORD FIREPROOF PLATE WALL Co., LTD., manufacturers and erectors of Bruckner's Patent Wall Partitions, dealers in lime, cement, &c., Victoria Works, Rock Lane, Bradford. Capital: £5,000 in £1 shares.

COOPER, WETHEN & Co., LTD., stone and granite merchants, quarrymen, contractors, dealers in building materials, &c., 16, Water Lane, E.C. Capital: £20,000 in £10 shares.

T. ROWBOTHAM & Co., LTD., engineers, colliery furnishers, manufacturers of self-oiling tram wheels, oil merchants, &c. Capital: £20,000 in £5 shares (2,000 preference).

ARENIG GRANITE Co., Ltd., quarry proprietors, producers of and dealers in stone for road making, building, &c., manufacturers of slates, slabs, setts, concrete, &c. Capital: £6,000 in £10 shares.

BEIRA TOWN SITES, LTD., to acquire by purchase lease, exchange, licence, &c., lands, buildings, &c., to erect dwelling-houses, hotels, shops, &c. Capital: £50,000 in £1 shares.

HUDSON'S BRICK, TILE AND TERRA-COTTA Co., LTD., manufacturers of bricks, tiles, pottery, terra-cotta, &c., Barwell Lane, Hinckley, Leicester. Capital: £10,000 in £10 shares.

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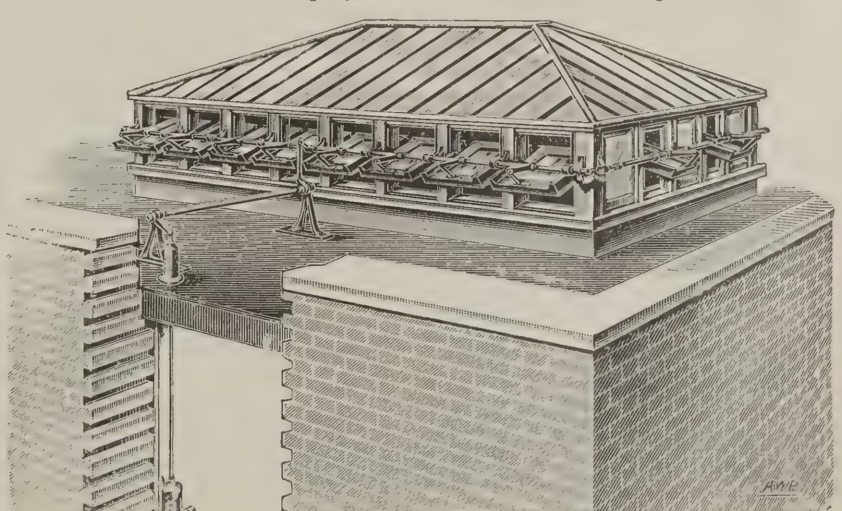

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**Advertisement Aphorism for the Week.**

*The right advertisement, at the right time, in the right medium. These ensure success.*

## Appointments Wanted.

*The charge for Advertisements under this heading is 1s. 6d. per insertion not exceeding four lines, and 6d. per line afterward, prepaid. Three insertions may be had for the price of two. Advertisements must reach the Office not later than 5 o'clock on Monday.*

A BERTH desired in Architect's office by Assistant Art Master (23) contemplating change of profession; 7½ years' all round Art teaching experience, strong in Architecture and Design, perfect draughtsmanship. Excellent testimonials, accept low commencing salary.—T. T. Nelson, 6, Springhurst Road, Shipley, Yorks.

ADVERTISER (33), a competent Surveyor and Draughtsman, with wide experience of construction and materials, offers his services temporarily for nominal salary in return for practise and expert instruction in quantity work. — Write "Practise," Builders' Journal Office, 6, Great New Street, Fetter Lane, E C.

AN ARCHITECT has TIME to ASSIST others with Working Drawings, Details, and Perspectives at own office. Special terms for Competitions. Good general experience—Apply, H. L. Fedden, 11, Hart Street, Bloomsbury.

AN ARCHITECT is willing to assist others with designing working drawings from rough sketches, details, furniture delapidations, and superintending works, &c., at own office.—Frank Catling, 3, Featherstone Buildings, Holborn, W.C.

ARCHITECT'S ASSISTANT, six years' experience, requires engagement. Contract drawings, details, &c. Surveying, assistance with quantities. Box 2635, Builders' Journal Office, 6, Great New St., Fetter Lane, E.C.

ARCHITECT'S ASSISTANT desires situation as IMPROVER in good Office; Country or Town; Home Counties preferred. Neat and careful draughtsman. Good references.—J. D., Cade House, West Malling, Kent.

ARCHITECT'S ASSISTANT (22½) desires engagement. Good draughtsman, well up in working drawings and details, and measuring up. Moderate salary.—Box 2645, Builders' Journal Office, 6, Great New Street, Fetter Lane, E.C

ARCHITECT'S ASSISTANT (24) desires further experience in good office. London preferred. Accurate, varied experience, details, specifications, perspectives knowledge of quantities, supply any references required.—Box 2652, Builders' Journal Office, 6, Great New Street, Fetter Lane, E.C.

ARCHITECT'S ASSISTANT (29) desires ENGAGEMENT; 10 years' experience; good draughtsman and colourist; well up in working drawings, details, surveying; good references; moderate salary.—A. Randall, Hazelmere, Rusham Road, Egham.

ARCHITECT'S and SURVEYOR'S ASSISTANT desires ENGAGEMENT; Midlands preferred; general experience (gentleman); moderate salary.—Apply Box 2643, Builders' Journal Office, 6, Great New Street, Fetter Lane, E.C.

ARCHITECTURAL DRAUGHTSMAN, Improver, desires re-engagement, age 22, four years' experience builder's office, working and detail drawings, general office routine. Town south of London preferred. —A. W. T., Falconhurst Lodge, Edenbridge.

ARCHITECT'S JUNIOR ASSISTANT desires situation in a Birmingham office; 5½ years' good experience in well-known office. Contract, Plans, Specifications, Details, &c., good draughtsman.—Box 2668, Builders' Journal Office, 6, Great New Street, Fetter Lane, E.C.

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# Coming Events.

**Wednesday, November 18.**

ARCHITECTURAL ASSOCIATION (Discussion Section).—Mr. M. G. Pechell on "Travelling on the Continent," at 7.30 p.m.

GEOLOGICAL SOCIETY.—Meeting at 8 p.m.

SANITARY INSTITUTE (Lectures and Demonstrations for Sanitary Officers, Part II.).—Inspection and Demonstration at Harrison & Barber's Knacker Yard, Winthrop Street, Whitechapel, E., at 3 p.m., conducted by Mr. H. King Shaw.

QUANTITY SURVEYORS' ASSOCIATION.—General Meeting at Holborn Restaurant at 4 p m.

SOCIETY OF ARTS.—Opening Meeting of the 150th Session. Address by Sir W. Abney, Chairman of the Council, at 8 p.m.

BUILDERS' FOREMEN AND CLERKS OF WORKS' INSTITUTION.—Ordinary Meeting at 8 p.m

ST. PAUL'S ECCLESIOLOGICAL SOCIETY—Dr J. Wickham Legg, F.S.A., on "The Bledlow Inventory of 1783: Its Genuineness and Curiosities," at 8 p.m.

NORTHERN ARCHITECTURAL ASSOCIATION.—Students' Evening.

GLASGOW ARCHITECTURAL ASSOCIATION.—Mr. Wilson on "The Palace of Versailles," at 8 p m.

CHEMICAL SOCIETY.—Meeting at 5.30 p.m.

**Thursday, November 19.**

SANITARY INSTITUTE (Lectures and Demonstrations for Sanitary Officers, Part II.).—Mr. James King on "Diseased Meat," 7 p m.

SOCIETY OF ARCHITECTS.—Presidential Address at 8 p.m.

LEEDS AND YORKSHIRE ARCHITECTURAL SOCIETY.—Presidential Address by Mr. Butler Wilson, F.R.I.B.A., and Distribution of Prizes at 7.30 p.m.

**Friday, November 20.**

THE INSTITUTION OF MECHANICAL ENGINEERS.—Mr. R. H. Fowler on "Roofing Existing Shops while work is proceeding." Mr. Thomas E. Stanton, D.Sc., on "Experiments on the Efficiency of Centrifugal Pumps," at 8 p.m.

ARCHITECTURAL ASSOCIATION.—Mr. H. M. Cautley on "Farm Buildings," at 7.30 p.m.

GLASGOW TECHNICAL COLLEGE ARCHITECTURAL CRAFTSMEN'S SOCIETY.—Mr. James C. Walker on "Planning and Construction of Burgh Buildings," at 8 p.m.

JUNIOR INSTITUTION OF ENGINEERS.—Mr. G. Canning on "Fires on Shipboard."

SANITARY INSTITUTE (Lectures and Demonstrations for Sanitary Officers, Part II.).—Mr. E. Petronell Manby on "The Appearance and Character of Fresh Meat and Preserving and Storing Food, &c.," at 7 p.m.

CITY OF LONDON COLLEGE SCIENCE SOCIETY.—Prof. H. Langhorne Orchard, M.A., B.Sc., on "Science and Evolution," at 8 p.m.

**Saturday, November 21.**

JUNIOR INSTITUTION OF ENGINEERS.—Visit to Orchard Dock, Blackwall, to witness a demonstration of fire-extinguishing, &c., by the Clayton Company, at 2.30 p.m.

**Monday, November 23.**

THE SURVEYORS' INSTITUTION.—Mr. Herbert T. Scoble, P.A.S.I., on "Industrial Decentralisation, an Important Factor in the Solution of the Housing Problem," at 8 p.m.

SANITARY INSTITUTE (Lectures and Demonstrations for Sanitary Officers, Part II.).—Mr. E. Petronell Manby on "The Hygiene of Byres, Lairs, Cow Sheds, and Slaughter Houses, &c.," at 7 p.m.

**Wednesday, November 25.**

EDINBURGH ARCHITECTURAL ASSOCIATION.—Mr. David M. Nesbit, M.I.C.E., on "Warming and Ventilation," at 8 p.m.

SANITARY INSTITUTE (Lectures and Demonstrations for Sanitary Officers, Part II.).—Mr. E. Petronell Manby on "The Laws, By-laws, and Regulations affecting the Inspection and Sale of Meat, &c.," at 7 p.m.

NORTHERN ARCHITECTURAL ASSOCIATION.—Council Meeting at 6.45 p.m. Rev. Canon Savage, M.A., on "The Development of the distinctly English Type of Church," at 7.30 p.m.

# Current Market Prices.

## FORAGE.

| | | £ | s. | d. | £ | s. | d |
|---|---|---|---|---|---|---|---|
| Beans .. .. .. | per qr | 1 | 14 | 0 | 2 | 0 | 0 |
| Clover, best .. .. | per load | 4 | 5 | 0 | 4 | 10 | 0 |
| Hay, good .. .. .. | do. | 3 | 12 | 6 | 4 | 0 | 0 |
| Sainfoin mixture .. | do | 3 | 15 | 0 | 4 | 5 | 0 |
| Straw .. .. .. | do. | 1 | 10 | 0 | 2 | 0 | 0 |

## OILS AND PAINTS.

| | | £ | s. | d. | £ | s. | d. |
|---|---|---|---|---|---|---|---|
| Castor Oil, French .. | per cwt. | 1 | 0 | 5 | — | | |
| Colza Oil, English .. | do. | 1 | 3 | 0 | — | | |
| Copperas .. .. .. | per ton | 2 | 0 | 0 | — | | |
| Lard Oil .. .. .. | per cwt. | 2 | 15 | 0 | 2 | 17 | 0 |
| Lead white, ground, carbonate .. .. | do. | 1 | 4 | 10 | — | | |
| Do red .. .. .. | do. | 1 | 0 | $4\frac{1}{2}$ | | | |
| Linseed Oil, barrels .. | do. | 0 | 17 | $7\frac{1}{2}$ | — | | |
| Petroleum, American .. | per gal | 0 | 0 | $7\frac{5}{8}$ | 0 | 0 | $7\frac{7}{8}$ |
| Do. Russian .. | do. | 0 | 0 | $6\frac{1}{4}$ | 0 | 0 | $6\frac{3}{4}$ |
| Pitch .. .. .. | per barrel | 0 | 8 | 0 | — | | |
| Shellac, orange .. .. | per cwt | 11 | 11 | 0 | — | | |
| Soda, crystals .. .. | per ton | 3 | 2 | 6 | 3 | 5 | 0 |
| Tallow, Town .. .. | per cwt. | 1 | 7 | 6 | — | | |
| Tar, Stockholm .. .. | per barrel | 1 | 0 | 6 | — | | |
| Turpentine .. .. | per cwt. | 1 | 14 | 0 | — | | |

## METALS.

| | | £ | s. | d. | £ | s. | d. |
|---|---|---|---|---|---|---|---|
| Copper, sheet, strong .. | per ton | 73 | 0 | 0 | — | | |
| Iron, Staffs., bar .. .. | do. | 6 | 5 | 0 | 6 | 7 | 6 |
| Do. Galvanised Corrugated sheet .. | do. | 10 | 15 | 0 | 11 | 0 | 0 |
| Lead, pig, Soft Foreign .. | do. | 11 | 0 | 0 | 11 | 2 | 6 |
| Do. do. English common brands .. | do. | 11 | 10 | 0 | 11 | 12 | 6 |
| Do. sheet English 3lb. per sq. ft and upwards .. | do. | 14 | 0 | 0 | — | | |
| Do. pipe .. .. .. | do. | 15 | 0 | 0 | — | | |
| Nails, cut clasp, 3in to 6in. | do. | 9 | 5 | 0 | — | | |
| Do. floor brads .. | do. | 9 | 0 | 0 | — | | |
| Steel, Staffs., Girders and Angles .. .. | do. | 5 | 10 | 0 | 7 | 2 | 6 |
| Do do. Mild bars .. | do. | 6 | 0 | 0 | 6 | 5 | 0 |
| Tin, Foreign .. .. | do. | 115 | 2 | 6 | 115 | 12 | 6 |
| Do. English ingots .. | do. | 118 | 10 | 0 | 121 | 2 | 6 |
| Zinc, sheets, Silesian .. | do. | 23 | 2 | 6 | — | | |
| Do. do. Vielle Montaigne | do. | 23 | 10 | 0 | — | | |
| Do. Spelter .. .. | do. | 20 | 15 | 0 | 21 | 17 | 6 |

## TIMBER.

### SOFT WOODS.

| | | £ | s. | d. | £ | s. | d. |
|---|---|---|---|---|---|---|---|
| Fir, Dantzic and Memel | per load | 1 | 13 | 0 | 3 | 0 | 0 |
| Pine, Quebec, Yellow .. | do. | 5 | 5 | 0 | 6 | 5 | 0 |
| Do. Pitch .. .. | do. | 2 | 12 | 0 | 3 | 3 | 0 |
| Laths log, Dantzic .. | per fath. | 4 | 10 | 0 | 5 | 10 | 0 |
| Do. St. Petersburg .. | do. | 7 | 5 | 0 | — | | |
| Deals, Onega, White, 2nd, 3×11 | do. | 11 | 10 | 0 | — | | |
| Do. Kola, Yellow, 3rd, 3×8 | do. | 9 | 0 | 0 | — | | |
| Do. do. do. do. 3×9 | do. | 14 | 0 | 0 | 12 | 5 | 0 |
| Do. do. do. 4th, 3×9 | do. | 9 | 0 | 0 | 9 | 15 | 0 |
| Do. do. do. 5th, 3×9 | do. | 8 | 15 | 0 | — | | |
| Do. Uleaborg Yellow, 4th, 3×7 | do. | 6 | 15 | 0 | — | | |
| Do. Oserka, Yellow, 4th, 3×9 | do. | 11 | 15 | 0 | — | | |
| Do. do do. 5th, do. | do. | 9 | 10 | 0 | — | | |
| Do. Umba Yellow, 2nd, 3×11 | do. | 17 | 0 | 0 | — | | |
| Do. do. do. do. 3×9 | do. | 16 | 0 | 0 | — | | |
| Do. Rio prime pitch-pine, 3×9 | do. | 8 | 15 | 0 | 9 | 0 | 0 |
| Do. Batiscan, Spruce 1st, 3×11 | do. | 14 | 10 | 0 | — | | |
| Do. Mesane, White, 3rd, 3×9 | do. | 8 | 15 | 0 | — | | |
| Do. Galatz, 1st, White, 3×9 | do. | 10 | 10 | 0 | — | | |
| Do Keret Yellow, 2nd, 3×9 | do | 16 | 10 | 0 | 16 | 15 | 0 |
| Do. do. Yellow, 3rd, 3×9 | do. | 13 | 0 | 0 | — | | |
| Do. St. Petersburg, Yell, 3rd, 3×11 | do. | 7 | 10 | 0 | — | | |
| Do. do. do do. 3×9 | do. | 8 | 15 | 0 | — | | |
| Do. Quebec, Bright Spruce, 1st, 3×9 | do. | 11 | 15 | 0 | — | | |
| Do. do. do. do. 3×8 | do. | 10 | 10 | 0 | — | | |
| Do. do. do. do. 3×7 | do. | 10 | 15 | 0 | — | | |
| Do. do. do. 4th, 3×10 | do. | 9 | 0 | 0 | — | | |
| Do. do. Bright Pine, 2nd, 3×11 | do. | 17 | 0 | 0 | 19 | 5 | 0 |
| Do. Montreal, Bright Pine, 4th, 3×11 | do. | 9 | 15 | 0 | 10 | 0 | 0 |
| Battens, all kinds .. | do. | 6 | 10 | 0 | 21 | 15 | 0 |
| Flooring Boards 1in. prepared, 1st .. .. | per square | 0 | 11 | 6 | 0 | 12 | 3 |
| Do. 2nd .. .. | do. | 0 | 9 | 6 | | | |
| Do. 3rd, &c. .. .. | do. | 0 | 8 | 3 | 0 | 9 | 3 |

### HARD WOODS.

| | | £ | s. | d. | £ | s. | d. |
|---|---|---|---|---|---|---|---|
| Ash, Quebec .. .. | per load | 3 | 12 | 6 | — | | |
| Birch, Quebec .. .. | do. | 3 | 12 | 6 | 3 | 17 | 0 |
| Box, Turkey .. .. | per ton | 15 | 0 | 0 | 20 | 0 | 0 |
| Cedar, Cuba .. .. | per ft. sup. | 0 | 0 | $5\frac{1}{4}$ | — | | |
| Do. Honduras .. | do. | 0 | 0 | $4\frac{15}{16}$ | — | | |
| Do. Tobasco .. .. | do. | 0 | 0 | 3 | — | | |
| Elm, Quebec .. .. | per load | 4 | 0 | 0 | — | | |
| Mahogany, Average Price for Cargo, Honduras .. | per ft. sup. | 0 | 0 | $6\frac{19}{32}$ | — | | |
| Do. African .. | do. | 0 | 0 | $3\frac{15}{16}$ | — | | |
| Do. St. Domingo | do. | 0 | 0 | $3\frac{29}{32}$ | — | | |
| Do. Cuba .. | do. | 0 | 0 | $4\frac{11}{32}$ | 0 | 0 | $4\frac{11}{16}$ |
| Do. Lagos .. | do. | 0 | 0 | $3\frac{21}{32}$ | 0 | 0 | $4\frac{19}{32}$ |
| Do. Benin .. | do. | 0 | 0 | $3\frac{13}{16}$ | 0 | 0 | $4\frac{1}{4}$ |
| Do Tobasco .. | do. | 0 | 0 | $3\frac{3}{4}$ | — | | |
| Oak, Dantzic and Memel | per load | 3 | 5 | 0 | 3 | 15 | 0 |
| Do. Quebec .. .. | do. | 6 | 5 | 0 | 6 | 10 | 0 |
| Teak, Rangoon, planks .. | do. | 16 | 0 | 0 | 17 | 10 | 0 |

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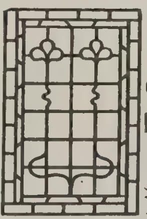

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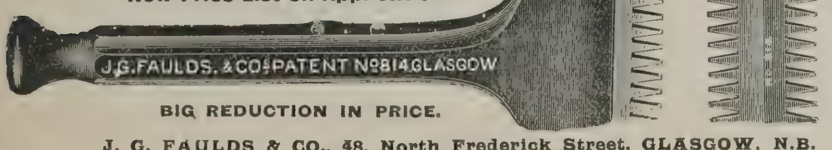
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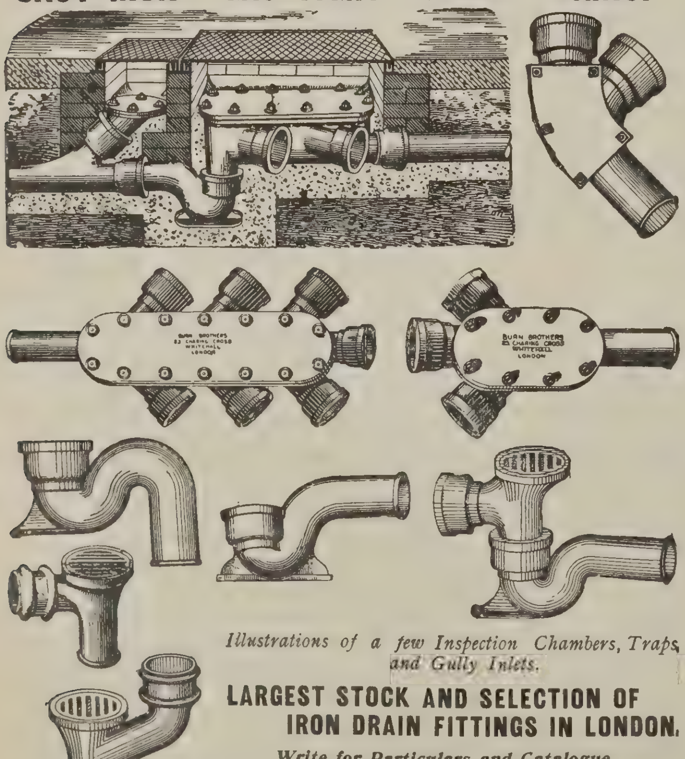

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THE

# BUILDERS' JOURNAL

AND ARCHITECTURAL RECORD.

November 25, 1903. Vol. 18, No. 459 — 6, Great New Street Fetter Lane, E.C.

## Summary.

The best and most complete reproductions of the King's Sanatorium which have yet appeared are given in this issue. The sanatorium will cost £75,000. (Page 220.)

At a conference held last week at the Guildhall between the Plumbers' Company, representatives of the larger water anthorities of the country, and the R.I.B.A., a resolution was passed in support of plumbers' registration. (Page 228.)

In his presidential address to the Society of Architects, Mr. Walter W. Thomas said that no amount of argument could get over the fact that the profession was practically solid on the principle of registration, and when it came to fighting out the details the common-sense of the majority was bound to win. The Institute expressed sympathy with the principle, but would not seek Parliamentary powers until it had tried every other possible scheme. He protested against the appointment of Mr. Bodley as co-architect with Mr. Scott for Liverpool Cathedral. Referring to the Ancient Lights Bill, he said it took the matter out of the lawyer's hands and put it into the surveyor's, so that the building owner was no better off than before. (Page 229.)

The widening of London Bridge is expected to be finished about the end of next January. (Page 228.)

The Corporate Property Committee of the London County Council do not think the building conditions of the Strand improvement scheme are onerous, and though no bids for plots were forthcoming at the last auction they are of opinion that no difficulty will be experienced in eventually disposing of them. (Page 229.)

The great discovery of the year in the Roman Forum has been that of a large base of concrete which must have supported a colossal monument, conjectured to be an equestrian statue of Domitian. (Page 231.)

Memorial tablets are to be fixed on three houses in London occupied by Herschel, Dickens and Kean. (Page 231.)

An *impasse* has arisen in regard to the rebuilding of St. Mark's Campanile at Venice. Comm. Boni and Signor Beltrami have both given up the work, which is now in the hands of a committee of five architects, who are discussing what shall be done with the foundations, which are insecure, though the foundation-stone of the new tower has been laid upon them! (This page.)

A valuable paper on farm buildings was read by Mr. H. M. Cautley, A.R.I.B.A., before the Architectural Association on Friday last. He said that the perfect plan would be found between the old-fashioned and the modern or "model" homesteads. He advocated that all parts should, as far as possible, be approached from a common farm roadway, not from the inside. (Page 220.)

**The Muddle over the Campanile.** It would have saved a great deal of expense and ill-feeling if the proposal to rebuild St. Mark's Campanile at Venice had never been adopted: we have been against it from the very first, and especially against the erection of a duplicate of the old tower, for which there is no sane reason. However, the rebuilding having been decided on, it will be remembered that considerable time was occupied in clearing away the *débris*. Since that work was finished all kinds of jealousies and differences have arisen. Commendatore Boni originally had the direction of operations, but he gave it up in disgust and went back to his excavations in the Roman forum. Then came Signor Beltrami, a well-known architect and engineer of Venice, and the foundation-stone of the new tower was actually laid with his name upon it. But he also has been obliged to retire, for it was found that the stones in the old foundations were loose and the lime washed away, being quite unfit in their present condition to receive the mass of a huge brick tower. Now a committee of five architects has the work in hand, and from all accounts there is not such agreement among them as one would desire. Apparently, they hope to proceed with the rebuilding by patching up the foundations, which, in any case, will need to be widened from 255 to 525 square metres. Four thousand piles are to be driven, and this is now being proceeded with to the accompaniment of the pile-drivers' chant. Maybe there will be a dirge to sing later, for the building of a great campanile on foundations of doubtful solidity may result in one of two things—either the ignoble task of making them sound after the laying of the foundation-stone, or, if built on the existing basis, another disaster.

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**The Great Unpaid.** A POINT has arisen between the Bridgend Guardians and their architect (Mr. P. J. Thomas) which, though specifically a matter of arrangement between themselves, is in its general bearing of interest to architects as a body. Mr. Thomas is under agreement with the Guardians to prepare plans for them according to the ordinary R.I.B.A. schedule—that is, 5 per cent. on executed work, 2 per cent. for quantities, &c., and 2½ per cent. for plans prepared but not carried out. It had been intended to build a new workhouse at a cost of £35,000, plans for which were prepared, though the total outlay proposed is now stated to be £70,000: and it was the architect's fees on this unexecuted work which formed the subject of discussion at the Board's last meeting. One member remarked that if they had to pay percentages on the total they would be made bankrupt; and that all Mr. Thomas could recover was 5 per cent. on the plans for work carried out and 2 per cent. on the quantities. We would observe, however, that the legal aspects of the matter are quite different, for an architect is entitled to 2½ per cent. on plans prepared whether they are carried out or not—when they *are* carried out another 2½ per cent. will need to be added. In the case under notice the Board finally decided to pay their architect on the work carried out only. As they intend to come to a decision about the proposed rebuilding in a few months there is no cause for complaint; but it is worth noting that a Board may embark on a scheme and instruct an architect to prepare plans, and that hostile criticism and differences of opinion may afterwards arise, resulting in the shelving of the scheme indefinitely—leaving the architect unpaid for the work he has done. As already stated, he can legally recover the 2½ per cent. in any event, but it is not always politic to resort to the law: and that fact makes one see the more clearly that boards of management may get precious long credit from their architect.

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**Drawings of Venice.** IN the early part of this summer Mr. George C. Haité, R.I., R.B.A., went to Venice in order to have a three months' rest. The results of that rest (!) can now be seen at The Modern Gallery, 175, Bond Street, W., where more than a hundred of his water-colour drawings are on exhibition till December 24th. They are all most delightful in colour, full fresh colour put on with great freedom and skill. Mr. Haité, indeed, is the very antithesis of that kind of artist who wanders in gloomy shades and can get no further than washed-out greens and drabs, artists forsooth of the "dirty" school. Mr. Haité's drawings are all of Venice—vistas of its quays, its streets and houses, boats and bridges. Most exhibitions are too extensive, but in this one we can examine each single drawing with interest and afterwards look at some again and again. One lovely drawing shows the Chiesa dei Gesuati on the Zattere, purchased for presentation to the Pietermaritzburg Corporation Gallery, another the boatyard at Rio Trovaso, another the Rialto, and others the church of Santa Maria della Salute, a beautiful view from the Riva Schiavoni, a fine study entitled "Under the Archway," St. Mark's and its Piazza—to mention just a few. Architects with a feeling for colour should not fail to see these drawings, the work of a most gifted artist.

# THE KING EDWARD VII. SANATORIUM.

About two years ago a competition was held for the best essay on a sanatorium for tuberculosis (consumption) in England, Sir Ernest Cassel having placed £200,000 at the disposal of his Majesty the King "for any philanthropic purpose he might have in view." The first prize of £500 was gained by Dr. Arthur Latham, of London, associated with Mr. William West, of London, as architect: a review of whose essay appeared in our issue for January 21st last, when plans and section of the proposed buildings were given. The sanatorium, however, is not to be built according to the prize plans, but from those prepared by Mr. H. Percy Adams, F.R.I.B.A., of 28, Woburn Place, W.C., who paid a special visit of inspection to the most modern sanatoria in Europe during the early part of this summer: so that his plans may be considered as embodying the best and latest practice in this branch of hospital work.

It would not serve any very useful purpose to go in detail into the features of the two sets of plans; but we may briefly note one or two important differences in the general arrangement of the buildings. In the prize plans the administration block, centrally placed, was connected by covered ways with the two ∧-shaped patients' blocks on either side, one in advance of the other. A reference to Mr. Adams's plans will show that he has gathered the blocks together in a much more workable manner, securing economy of access between the wings and the centre, and consequently economy of service. Then, again, attention may be drawn to the rearrangement of the administration block itself, which is planned with far greater skill. The patients' wings are similar in their general lay-out, but the window treatment on the south side is quite different; the prize plans show a rectangular arrangement (which would be exceedingly costly) intended to afford a pleasant outlook for patients and to enable one or other of the windows to be shut so as to avoid a draught: Mr. Adams adopts instead French windows.

The site consists of 171 acres, which have been purchased from the Earl of Egmont, on the southern slope of Easebourne Hill, a few miles from the Sussex border, and about four miles from Midhurst and seven from Haslemere. The sanatorium is to be constructed on the more southerly portion, at an altitude of 495ft., and will be backed and protected by a lofty pine grove. The spot is, in addition, practically sheltered by rising ground from every quarter except due south. The outlook is over the woods of fir, pine and oak of the lovely Sussex country, extending right away to the bold ridges of the South Downs. A series of walks will be cut in the pine wood and moorland, graded to suit different patients.

At first some difficulty was experienced in getting an adequate water-supply, but a reservoir has been constructed higher up on the hill capable of holding 160,000 gals., Mr. E. Brough Taylor having succeeded in collecting by culverts the water from a number of springs in the neighbourhood. Meteorological observations show that the climate of the district is mild and equable, the annual rainfall being 30in., the number of rainy days 157, the mean annual temperature 48 degs. F., and the average number of hours of sunshine 35 per week.

The King Edward VII. Sanatorium will have accommodation for one hundred patients—fifty male and fifty female. The original intention was to provide for those belonging to a class just above the very poor, such as teachers, governesses, clerks and shop assistants; but his Majesty did not think it right that those who could afford to pay for skilful treatment should be excluded from the benefits of the institution, since the sanatorium is to be the very best that can be constructed. Therefore, of the hundred beds, eighty-eight will be assigned to the more necessitous classes, while twelve will be reserved for the well-to-do.

The main buildings are situated nearly in the centre of the site, the laundry and boiler-house being to the north-west, in a hollow at a lower level. The medical superintendent's residence will be about 100ft. from the sanatorium, on the north-east side. The mortuary and pathological department will be reached from the sanatorium by a subway on the north-west of the medical officers' rooms, and will also be accessible from the carriage road. A small isolation block for cases of infectious illness will be provided. The sanatorium itself is divided into two distinct parts: (1) the administration building and (2) the patients' building, these being connected by a broad central corridor enclosed on the ground floor only. Both buildings are planned upon parallel lines east and west. The accommodation provided in the administration building is shown by the ground-floor plan in the centre of this issue and the first-floor plan on p. 223. All the living-rooms overlook the grounds to the west of the site, and command a view of the patients when taking exercise. On the lower ground floor under the medical officers' apartments are the porters' rooms. On the second floor are the thirteen nurses' bedrooms, facing south and west, with two bathrooms attached, while on first and second floors, reached by a separate staircase, are bedrooms for nineteen servants.

The patients' building is divided into three distinct blocks connected by corridors on each floor. On the first floor of the centre block are fourteen bedrooms (two as spare rooms for the well-to-do class), each 14ft. by 11ft. 3in. and 11ft. high, thus allowing 1,730 cub. ft. per head. There are also two sitting-rooms. All these rooms have a balcony 8ft. wide facing south, and it is arranged that each patient shall have a part screened off for his or her use with canvas fall-down blinds. A bathroom for every three patients is also provided, and an attendant's room. There is a covered promenade, for use in wet weather, 50ft. long. It will be noticed that the "well-to-do" patients have separate access to the grounds, the hydro-therapeutic department, medical consulting-rooms, dining hall and main entrance.

On the top floor of the central block is accommodation for twenty-two necessitous cases and one spare room. These wards are each 13ft. 6in. by 11ft. 6in. and 11ft. high, giving 1,700 cub. ft. space per head. They are intended for patients too ill to leave their rooms, and are provided with a balcony 8ft. wide, facing south. Owing to their central position they can be easily served from the kitchen (a subway connecting the two food lifts), are accessible from the medical officers' and nurses' quarters, and are near the passenger lift. The wing on each side of the central block has a covered promenade 150ft. long for the use of patients in wet weather. On the ground floor, but raised at least 7ft. from the ground level, are sixteen bedrooms—13ft. 6in. by 11ft. 3in. and 11ft. high—giving 1,670 cub. ft. per head, with a wide terrace (8ft.) in front and with nurses' rooms, linen-rooms, bathrooms, &c., arranged similarly to those on the first floor, but the balcony is here smaller (4ft. 3in. wide). At the extreme ends of the buildings are small fire-escape staircases giving access to the shelters or liegenhallen, which it is contemplated to build at the ends of the sanatorium. On the male patients' side workshops have been provided in the basement. The foundations are now being carried out by Messrs. Longley, of Crawley. The sanatorium is estimated to cost about £75,000.

# ARCHITECTURAL ASSOCIATION.

### Farm Buildings.

A meeting of the Architectural Association was held last Friday evening at 9, Conduit Street, W., Mr. R. S. Balfour, vice-president, being in the chair. The following gentlemen were elected members of the Association:—Messrs. H. S. Stowell, J. A. Wilson, F. S. Chesterton, C. W. Lucas, G. Hubbard, R. H. Browne, Lucio Velasco, H. de A. Brown-Morison, F. A. Collard, S. Murray, S. L. Steane and L. G. Rayner. Mr. Horace Field was reinstated a member. The following additional list of donations to the New Premises fund was announced:—

| | £ | s. | d. |
|---|---|---|---|
| H. Saxon Snell | 52 | 10 | 0 |
| Edwin C. Pinks | 15 | 15 | 0 |
| A. O. Collard | 12 | 12 | 0 |
| W. D Caröe (2nd donation) | 10 | 10 | 0 |
| Proprietors of "The Builder" | 10 | 10 | 0 |
| W. Talbot Brown | 5 | 5 | 0 |
| R. H. Butterworth | 5 | 5 | 0 |
| Lander, Bedells & Crompton | 5 | 5 | 0 |
| C. E. Varndell | 5 | 5 | 0 |
| W. C. Waymouth | 5 | 5 | 0 |
| Edmund Woodthorpe | 5 | 5 | 0 |
| G. Corderoy | 5 | 0 | 0 |
| A H. Kersey | 3 | 3 | 0 |
| J. E. Capell | 2 | 2 | 0 |
| W. Dewes | 2 | 2 | 0 |
| R. A. V. Harrison | 2 | 2 | 0 |
| W. Stewart (2nd donation) | 2 | 2 | 0 |
| Arthur Stratton | 2 | 2 | 0 |
| H. Tooley | 2 | 2 | 0 |
| F. A. Coles | 1 | 1 | 0 |
| L. G. Detmar | 1 | 1 | 0 |
| A. W. Field | 1 | 1 | 0 |
| A. J. Hopkins | 1 | 1 | 0 |
| Ernest Newton | 1 | 1 | 0 |
| T. M. Smith | 1 | 1 | 0 |
| C. F. A. Voysey | 1 | 1 | 0 |
| R. H. Dods | | 10 | 6 |
| D. B. Hart | | 10 | 6 |
| L. Morgan | | 10 | 6 |
| T. Campbell Pope | | 10 | 6 |

It was announced that 162 members had doubled their donations, amounting to an addition of £116, at the Committee's suggestion.

Mr. H. M. Cautley, A.R.I.B.A., then read a paper on "Farm Buildings." He said:—

The first essential is, of course, a good water-supply for both house and yards. You will no doubt have noticed that this necessity was provided for by our ancestors by grouping all the buildings about some good pond; and though no doubt picturesque, in these days of windmill-power and hydraulic rams some further reasons must be adduced for planning the buildings about visible water.

The next most important point, in my estimation, is to get the building quite close to some hard metalled road maintained at the public expense. A farmer's private roads in and about his holding are a perennial source of expense to him, and I have rarely seen them except in such a condition that the labour of carting is doubled.

As to the position of the buildings on the holding, in an arable one they should be as near the centre as possible, unless on the slope of a hill, when they should be nearer the top, to save the uphill carting of manure. With the improved machinery of to-day, threshing and winnowing can be accomplished in one performance, and thus there is no necessity for bringing all to the stack-yard adjoining the barn. In dairy farms, however, the buildings should be near the centre of the pasturage part of the holding, so as to avoid fetching and feeding the cows from long distances.

The best aspect for stock is no doubt south, with a touch of east in it; but when building on a slope, unless the aspect is utterly wrong, the homestead should perhaps be placed across the direction of the slope, or some very awkward steps will have to be dealt with.

I have not come with any perfect plan, nor am I prepared to tell you how it may be attained, but I believe that it will be found somewhere between the two extremes

THE KING EDWARD VII. SANATORIUM, MIDHURST: MAIN ENTRANCE, ON NORTH FRONT. H. PERCY ADAMS, F.R.I.B.A., ARCHITECT.

presented by the old-fashioned and modern or "model" homesteads. Old homesteads are generally rambling, whereas in the modernized type all the buildings, even down to the fowl-house, are grouped in one large parallelogram, the outside walls of which arise square and gaunt, with scarcely an opening to be seen. I am not urging its ugliness, though I believe it to be the outcome of one of its most practical defects, namely, that everything is approached from within, frequently from internal roads and alleyways. Were it situated on some of our bleakest wold lands I should find excuse in the pitiless wind sand rains which drive across them, but why when on some sheltered hillside or sunny valley? It does not save roadways—the sparse openings are distributed on all sides and they must have approaches, so I believe the system is even wasteful of cartway. Besides, buildings so grouped cannot be as healthy and sanitary as those built in more open formation, for the large deposit of manure which accumulates in the yards must have a deleterious effect when in so confined an area, whilst the ravages of disease would be much more difficult to check.

The internal alley-ways also make independent walls just as necessary as they are in more open formation, so I do not believe there is any economy effected in construction. In case of fire, too, the whole range of buildings is endangered.

In designing a complete homestead myself I would certainly have as few internal approaches as possible, but everything, as far as possible, approached from a common farm roadway; and whilst grouping the cowsheds, stockyards and piggeries under the shelter of the barn, granary, &c., I would keep the horse-yards, stables and cartsheds distinct.

But I will proceed to the practical details, only reminding you that I shall treat of each in its simplest form, believing that all repairs should be capable of being undertaken by the estate carpenter. For this reason, and for the reason that on most estates enough timber is felled and steam-sawn sufficient for the purpose of repairs, I am strongly in favour of the simplest wood construction in everything but the main fabric.

### Stables.

In cart-horse stables it is very desirable that each horse should be provided with a separate division, which must in no case be less than 6ft. wide. In stables having no divisions some of the horses will never lie down, much to the detriment of their working powers, and, what is worse, the stronger horses will prevent the weaker from getting their fair share of food.

I am afraid, however, that many farmers shrink from what they consider such extravagance, in which case perhaps the best compromise is to divide up for pairs, the divisions with 10ft. centres, and the weak horses can then be put together.

The width of stables may be arrived at by allowing 2ft. for manger, 7ft. for standing, 12in. for gutter, and 5ft. for passage-way behind.

The cubical contents necessary, 800ft. per animal, applies to both stables and cow-sheds.

No general rule for determining the number of horses required to be provided for can be given, though, roughly speaking, a horse to every 25 acres is what is generally needed.

### The Manger

should be of $1\frac{1}{2}$in. plank, and about 3ft. high, with stout, rounded, hardwood chin-piece, preferably in oak, as I believe the acid in this wood makes them most averse to cribbiting. The divisions should have hardwood heel posts, 1ft. in front of gutter and 5ft. out of ground, with the arrises taken off, as should be done to all fittings; the boarding to them may be 1in. rough, but in any case should not be tongued, neither tongued into the rails (as this makes repairs difficult), but nailed one side only, and kept off the ground to prevent decay.

I will say nothing about feeding passages behind the manger, as there is not the objection in feeding horses from the front that there is with cows, but should it be possible to indulge in this extravagance there is no doubt that horses would do better with their noses further from the walls.

### Doors and Windows.

The doors should be 4ft. wide and at least 7ft. 6in. high, in two heights, and capable of being hinged right back and there fastened, as should all farm doors; whilst the windows should be of the hit-and-miss pattern, with glazing over, unless, having a lofty stable, you can put your light in front, but well above the horses' heads, or, better still, can bring yourself to put plenty of glass tiles in the back slope of the roof, than which, I suppose, there is really no better way of lighting (at all events for cowsheds) or of avoiding breakages. But unless the roof is pantiled and glass tiles are being used, large sheets should be employed, as every joint forms a lodgment for dirt and obstructs the light eventually.

### Paving.

For the paving stables a very hard brick will be required, or the iron-shod feet of the horses will make short work of it. Blue bricks on edge will make the cheapest efficient paving; or there is a red brick made at Skier's Spring, near Barnsley, which I believe to be just as good. The fall would be at least 1 in 40, and the gutter can best, perhaps, be made with bull-nosed bricks, and of sufficient width to allow the free passage of a shovel.

To ensure the all-important ventilation, I think the best and safest form is still that employed by our ancestors, namely, carrying the eaves well over, leaving out all filling between the feet of the rafters, and raising every fourth or fifth ridge tile. A fodder and harness-room combined should be in connection with the stable, and approached from it. A small compartment opening out of same for chaff is a great convenience, especially if arrangements are made for filling it from outside by a small door high up in it.

Lofts running over the stables, with arrangements for bundling the hay down into overhead racks, are to be condemned on every score; with racks by the side of the manger the hay has to be carried separately to each, and waste is far less likely to occur.

To form these racks the chin-piece should be carried through, bars let into it and carried down on to a brick pinning about 9in. high, and the bottom sloped up to the back so as to let out all the hay-seed and dust.

The stables should have direct access to a horse-yard, with shelter sheds, in the construction of which it must be remembered that the manure is allowed to accumulate to a depth of about 2ft. before removal, so that the eaves must be kept high enough to allow this, and for the horses to pass beneath; about 8ft. is usual; 14ft. must be the minimum depth, and 2ft. or 3ft. more may be added with advantage. All the eaves should be spouted to prevent the manure being more rain-washed than is necessary, but I would not advocate horse-yards being entirely covered. In the Eastern Counties we turn the horses out at night, and attribute their hardiness to it, which will make evident my objection to covered yards.

With regard to posts let into the ground to take roof-plates, and the constant annoyance of rotting feet, the best method I have seen is to use steel joists bedded in a block of cement and attached to the roof-plates with angle irons; but to both sides of the web, at least for a height of 6ft., a chamfered block of wood should be bolted, or serious injury may be caused to the animals. Cast-iron columns ought never to be used, owing to their liability to fracture; a cart backed up against them would in many instances be sufficient to break them, and I have even seen a 4in. one broken by a bull which found it in his way.

The gates of all yards should be 10ft. wide, and hung to open outwards and fall right back. When there are gates between two yards they must, of course, be hung at least 2ft. up to clear the manure as it rises; and so, if the yards are ever to be used for pigs to run in, the bottoms must be filled in with elm slips, constructed like miniature gates, to work in grooves formed in the gate-posts.

Pailings make very bad fences between or around yards; but should they be necessary on the score of economy, do not point the tops, and let them be close, or an animal may get hung up and seriously damaged. For the same reasons, keep the top rails of gates close enough to prevent animals ever getting their heads through.

### Cowsheds.

In treating of cowsheds, we come perhaps to the most important buildings which go to make up a homestead.

Two kinds of sheds are in common use—those for single rows of cows and those where they stand double. No preference can be given to either system, except that in the latter, for a large number of cows, it will be cheaper if the building stands independently, as then one roof takes the place of two; but generally it is possible to arrange some of the sheds as lean-to's against a barn or some higher building on the north side, thus giving them welcome protection and making quite economical the roofing of a single shed.

In a shed in which there are two rows they may either be arranged head to head, with the feeding passage in the centre, which is perhaps most convenient, as, the stockyards naturally flanking the shed, the manure can then be thrown straight out into them (though this arrangement makes it difficult to get fresh air to the heads of the animals); or tail to tail, with the dunging passage in the centre and the feeding passage on either side, in which case, however, the manure has to be bundled all the way down the dunging passage to the open door; but, as far as space is concerned, neither of these arrangements is more economical than the other, as may be deduced from the following figures:—

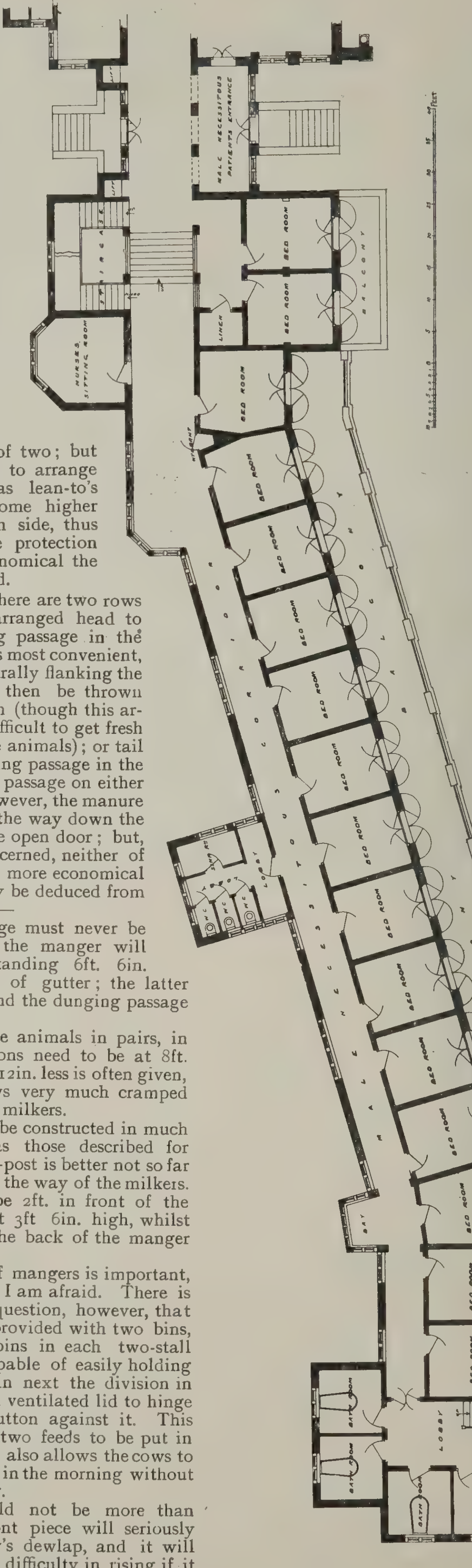
The feeding passage must never be less than 3ft. wide; the manger will take up 2ft., the standing 6ft. 6in. from manger to edge of gutter; the latter must be 12in. wide, and the dunging passage at least 4ft.

It is usual to tie the animals in pairs, in which case the divisions need to be at 8ft. centres: 6in. or even 12in. less is often given, but it leaves the cows very much cramped and also hampers the milkers.

The divisions may be constructed in much the same manner as those described for stables; but the heel-post is better not so far back, or it will get in the way of the milkers. It should certainly be 2ft. in front of the gutter and only about 3ft 6in. high, whilst if it rise to 5ft. at the back of the manger it will be ample.

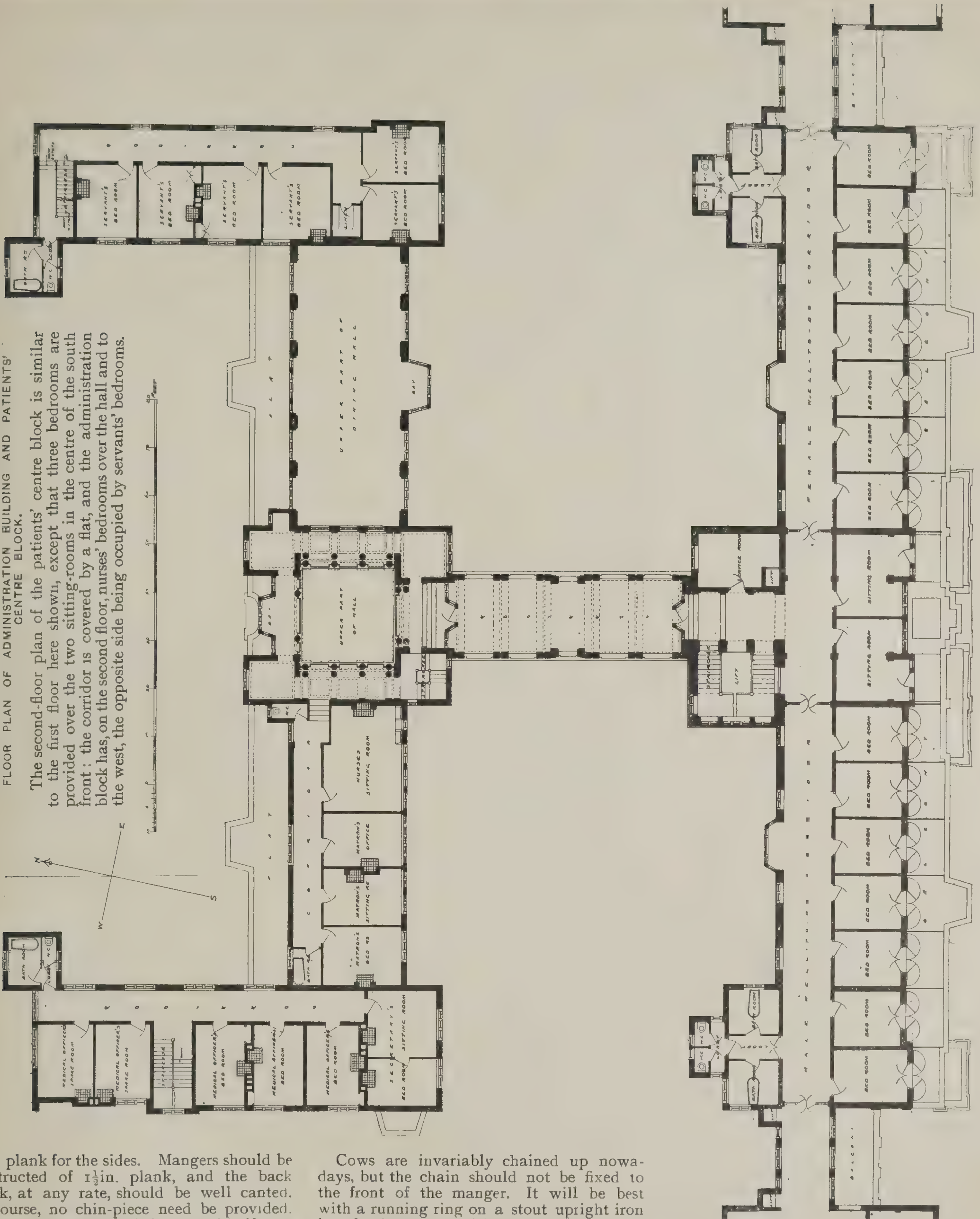
The construction of mangers is important, but little understood, I am afraid. There is in my mind little question, however, that each cow should be provided with two bins, which means four bins in each two-stall division, each bin capable of easily holding a bushel, and the bin next the division in each case fitted with ventilated lid to hinge back and fix with button against it. This arrangement allows two feeds to be put in at the same time, and also allows the cows to be fed the first thing in the morning without delaying the milking.

The height should not be more than 1ft. 9in., or the front piece will seriously incommode the cow's dewlap, and it will experience a greater difficulty in rising if it is not able to get its head over it. For depth the usual custom is to employ an



THE KING EDWARD VII. SANATORIUM AT MIDHURST: GROUND-FLOOR PLAN OF PATIENTS' (WEST) WING.

The first-floor plan is a duplicate of this, except that instead of the arrangement of the entrance (shown to the right on the above plan) there is a cross-ventilated corridor (shown to the left on the plan below); also the balcony in front of the bedrooms on the first floor is narrower than that on the ground floor.



THE KING EDWARD VII. SANATORIUM AT MIDHURST: FIRST-FLOOR PLAN OF ADMINISTRATION BUILDING AND PATIENTS' CENTRE BLOCK.

The second-floor plan of the patients' centre block is similar to the first floor here shown, except that three bedrooms are provided over the two sitting-rooms in the centre of the south front: the corridor is covered by a flat, and the administration block has, on the second floor, nurses' bedrooms over the hall and to the west, the opposite side being occupied by servants' bedrooms.

11in. plank for the sides. Mangers should be constructed of $1\frac{1}{2}$in. plank, and the back plank, at any rate, should be well canted. Of course, no chin-piece need be provided. A support, however, will be needed half-way between the divisions. The joints should be painted in.

How to prevent the cows pushing out the food into the feeding passages is a very difficult problem, and one which I have never seen satisfactorily solved. In my opinion the best method, if you can spare the room, is to put a ledge at the back with a small curb or canted plank. Of course, this difficulty does not arise where there is not feeding passage, a canted board against the wall throwing the food back. In this latter case it must be remembered, however, that the bin must not be put close up to the wall, or a large-horned cow will not be able to reach the bottom.

Cows are invariably chained up nowadays, but the chain should not be fixed to the front of the manger. It will be best with a running ring on a stout upright iron bar, fixed on the division near the manger. With quite a short chain, the cow then has perfect freedom when lying down, as the chain drops with it.

By far the most common mistake in cowshed construction is the paving of the whole area up to the manger, with a continuous fall from manger to gutter. The whole of the cows' excrement falling behind, there is in the first case no need for it, and when, in addition, we consider how averse a cow is to lie on a slope, and that the best standing is rammed chalk or clay, it will readily be seen that the paving in front of the heel-posts should be level and of the latter substances.

As to the paving of cowsheds, if it were not for the expense I should use V-grooved bricks, the grooves running only in the direction of the fall, as in economizing liquor it is very necessary that the liquids should pass rapidly to the gutters; but as a cheap paving I do not suppose a good bed of cement-concrete finely faced can be improved upon. The gutters are very important, as in all districts the local sanitary authorities are now empowered to control the construction of cowsheds, and they will not allow any covered drains, but insist on the open channel being carried right outside the shed a distance of 12in. before the liquid manure is disposed of in any way. Long lengths are thus made necessary, which should clear themselves with a small flow as rapidly as possible. I have therefore adopted the method of terminating the standing next the gutter with a stone slab slightly rounded on edge; and the dunging passage, which is all at a lower level, is sloped to same with a steeper incline as it approaches it. This system has many advantages. It forms a platform of the standing, and the dung falling on a lower level keeps the bed clean, whilst the litter falling from the platform is less liable to choke the channel. It is also easy to clean, conducive to a rapid flow, and easily detected. Of course, an ordinary channel such as described for stables may be used; but the litter always bridges it, making a platform for the dung, which will foul the cow, and its presence is also obscured. The paving of the feeding passages may be of rammed chalk or clay, unless trolleys are to be employed, when a concrete floor is necessary. It might here be mentioned that it does not seem necessary to have an elaborate system of drainage connected all to one big tank. I should say its benefits are more than doubtful. It is the custom now to have liquid manure carts with a pump and length of hose attached, so that small cemented tanks near the separate buildings, with the channels flowing direct into same, are practicable. They should, however, not be too large, and should have a small pit at one end of the chamber into which to put the hose.

The width of the door to the cowshed should be about 3ft. 9in. to 4ft. 10in. If you make it less, a cow forward in calf may be seriously injured, whilst should you make it more it would probably be equally dangerous, as then two cows would try to push in at once. Doors must be provided from sheds into the stockyard.

The sheds will naturally be built adjoining the yards, and unless you have covered yards with only dwarf walls between them and the stalls (it is difficult to foresee the action of draughts with the arrangement) it will be found convenient to have low doors somewhere at the ends of the sheds, opening into the yards, for throwing out the manure (the space beneath the windows can generally be utilized), and here again it must be remembered that the manure is allowed to accumulate to a depth of 2ft. or more, so that the floors of the sheds must be kept up from the yards and sloped ways made to the doors.

### Provision for Calves

should be made in conjunction with the cowsheds. Very often a space at the ends of the stalls is partitioned off for this purpose. If the site is dry, calves will no doubt do well on a well-drained floor, but if there is any possibility of damp a stout slatted floor, with $1\frac{1}{4}$in. spaces, will be necessary, and a dished floor beneath; all the voidings will then fall through. The slatted floor must, of course, be easily removable for cleaning purposes. Calving boxes should have at least 180 sq. ft., and if drained the floor should but slightly fall all one way to a gutter underneath one of the divisions kept up for that purpose; no gutter or other irregularity of the floor must be allowed, and a rammed chalk floor is preferable. The angles may have racks and mangers fitted across.

Bull-houses should be entirely independent, and should open into the stockyard. Mention should be made of cattle-boxes for fatting beasts; 80ft. to 90ft. super. is allowed for each box, and they should be built in ranges, divided by gate-like divisions capable of rising with the manure in grooves on either wall, and entirely removable. The beasts then rise on the manure they are making during the fatting period, and the manure generally attains a depth of about 3ft. The end of the building should be capable of being opened, so that with the divisions taken away a cart can back right in and clear away the manure. Of course, ordinary stalls answer for this purpose, but these boxes are very useful, as, should they not be required for fatting purposes, the division can be taken away and the shed used as a covered yard for young stock or any other purpose.

### Covered Yards.

As to the desirability of covered yards, I know there is a wide divergence of opinion, but when you think of the general use now made of cake foods, and the high manurial value of the excreta of animals so fed, it would seem to be most unwise to abstain from taking precautions to avoid the waste of it in rain-washed yards. In constructing them 160ft. super. should be allowed per animal, free ventilation should be provided in the roof (which should be of one span) and the gable ends should be covered in.

Coming to what may be termed the administrative block, namely, that which contains the straw-barn, food stores, &c., this is generally a two-storeyed building stretching east and west, with the stockyards, &c., grouped and sheltered under it on the south and the stackyard on the north.

### The Straw-Barn

now does not want to be of the size of the old threshing-barns, but only commodious enough to store about one day's threshing. It should be carried up the whole height, and have large doors 14ft. high for access, whilst, if possible, I like to see it arranged so that waggons can pass right through and out the other side through one of the stockyards. The floor may be of concrete, but the cartway would soon get broken up if of this material; it is best made of wood. I have seen the sawn-off butts of felled trees used with advantage. At the blank end doors high up in the walls are useful for passing the threshed straw through.

Next to the barn is generally placed the mixing-floor, with the root-store adjoining, and only divided by a dwarf wall, over which the roots can be served into the pulper, which stands just inside the mixing-floor. Both these departments should have wide doors, so that carts may back right in. It will be very evident that the root-house must have blank walls opposite the doors against which to stack the roots, and in the same way the mixing-floor should have a blank corner against which to stack the prepared food.

Over these departments are placed the cake-room with its crushing machine and chaff-cutting machine, with their shoots to the mixing-floor, and the granary beyond, all connected together for the convenience of trucking right through. The end next the barn should be open, and a cart under cover may then be loaded up with chaff, cake or corn and meal from the granary.

The floors of these upper departments should be grooved and tongued, any skirting should be in cement, and the end of all joists and the spaces above roof-plates filled up solid; the ceilings should not be plastered, lest there should be any harbour for vermin. The roofing must be quite weather-proof, and I do not consider pantiles sufficiently so.

If a fall of the ground can be utilized or by banking up a cart may be drawn level with the floor of the granary, so that everything can be barrowed straight in and all mechanical or other lifting dispensed with, it will be found of the greatest convenience. It is difficult to give an exact rule for determining the size of a granary, but they are very useful of a good size, and $2\frac{1}{2}$ft. super. per acre should be the minimum.

### Dutch Barns

are very deservedly growing in favour amongst farmers; their cost of construction is so little, and their usefulness so great, that they must be a good investment. Not only is all the cost of thatching avoided by their use, but in wet weather loaded waggons can be drawn beneath, and it is said ricks dry much better under them owing to the free passage of air over the top. The waggons draw between the bays, so that these should not be less than 12ft. wide; and as cost is the only thing which governs the length that they may usefully be made, any multiple of that figure will do; whilst to admit topped-up waggons to pass through they should be 14ft. high to the underside of plate, and to afford protection to the load they would best be 20ft. wide. As much space as possible should be left in the roof, and the whole fitted with gutters and down-spouting, while the gable ends should be closed in.

Cartsheds should, if possible, have a north-east prospect, and the openings be not less than 9ft. in the clear; the height of these should be not more than 8ft., in order to keep out the weather as much as possible. As to depth, a single waggon or two tumbrils will require 20ft., but 30ft. will accommodate two waggons and four tumbrils. Knocking stumps should protect the posts at entrance, and a guard-rail should be placed in front of the back wall.

An implement shed for the more expensive implements is necessary, and should have an opening 10ft. wide, with doors to lock-up, and provided with windows. If a toolhouse is provided, it may be best placed in conjunction with this.

### Piggeries.

Before designing piggeries some thought should be given as to whether they should take the old form of covered sty and run or the more modern box or pen. If the former is adopted, the chief necessity is to keep the covered lodging well above the level of the run, to ensure its being dry; but I would rather describe the boxes, as I believe them to be most useful. They should, if possible, be placed adjoining the stockyard, so that the manure may be flung out into it, and the store pigs allowed to run when the cattle are at pasture. This practice will greatly improve the quality of the manure in the yards.

The boxes should have an area of from 80ft. to 90ft. super., with perhaps one or two rather larger as farrowing pens, and be separated by walls about 4ft. 6in. high. If a feeding passage can be provided at the back leading to the boiling-house at the end of the range, it will make a most compact department. A further labour-saving device will be to have the feeding-troughs midway between the pen and the feeding passage, with a swinging shutter hung centrally above same so that it may be bolted on the pen side in filling the troughs, and then swung back and bolted next the passage, throwing the whole into the pen. It has a further advantage in not allowing the pigs so easily to get into the trough, fouling and wasting their food. The shutter, however, must be very strong. A guard rail 6in. wide and 9in. above floor should be placed round the farrowing pens to prevent the sow lying on her young.

Pigs will soon rout up a brick floor, and I believe the best is again concrete, cement faced, as this is more impervious and will carry off quicker the large amount of liquid voided by these animals, for which good drainage should be allowed into the yards.

The boiling house should provide accommodation for several meal and swill tubs, and have a good-sized copper and furnace fixed in it.

One or two good-sized loose boxes on the premises will be found useful for foaling and to act as sick boxes, and perhaps in one of them may be fitted a beam, capable of sustaining a ton, for slinging an injured animal or slaughtering those past veterinary aid.

I think now I have mentioned all the more important buildings about a farm for

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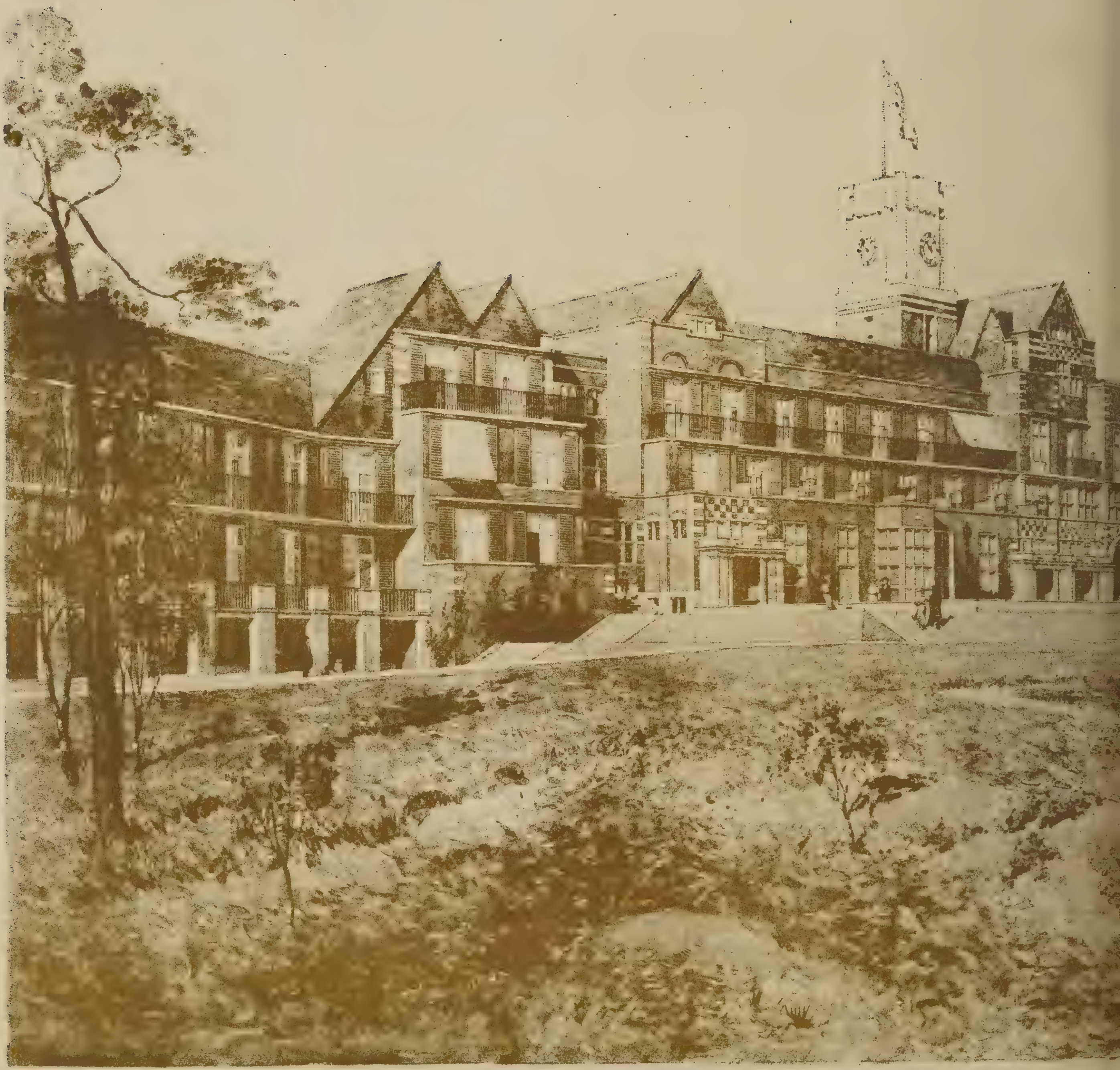
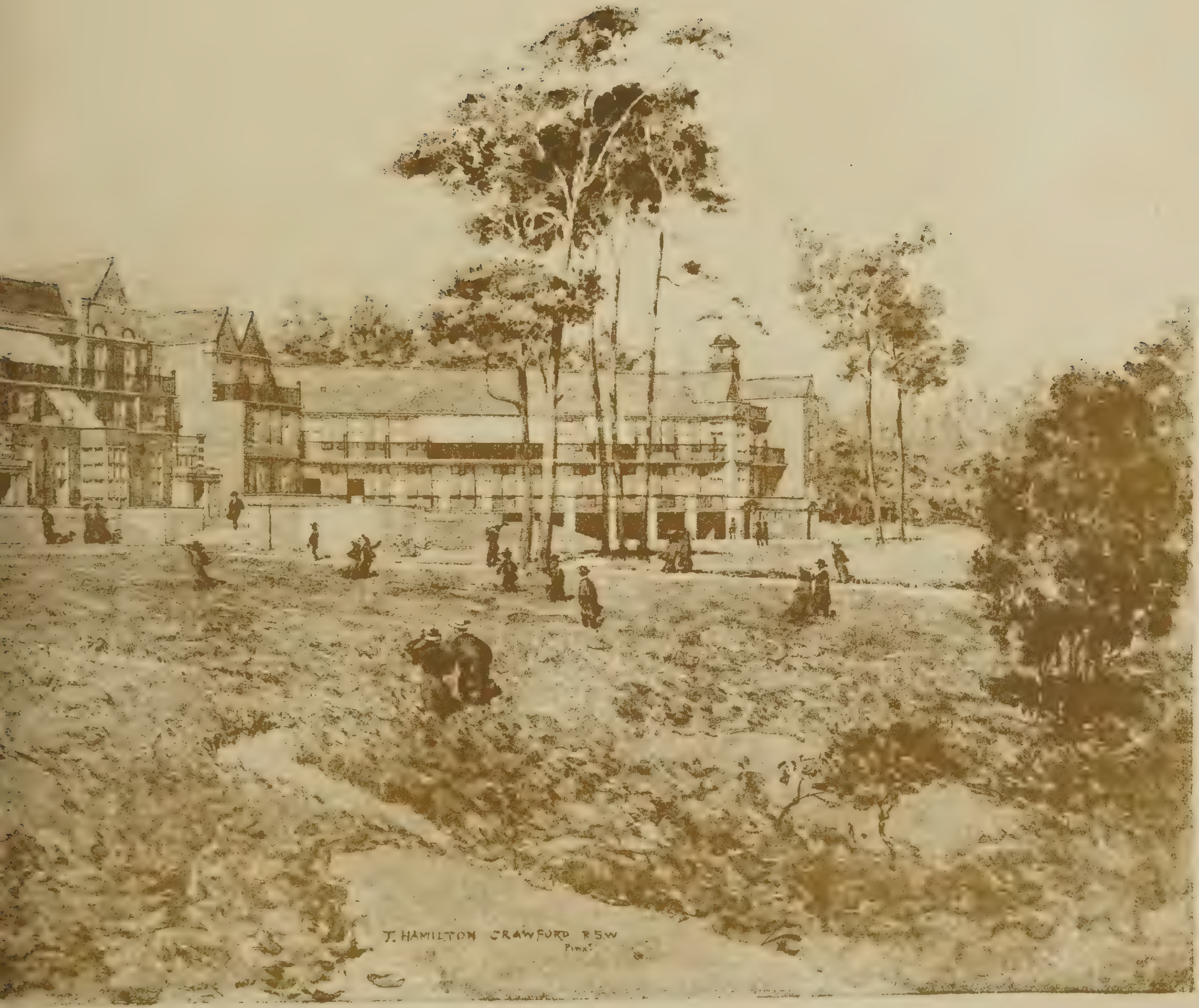


THE KING EDWARD THE SEVENTH SANATORIUM FOR

H. PERCY ADAMS,



INK-PHOTO." R. J. EVERETT & SONS, 56 LUDGATE HILL, LONDON, E.C.

ULOSIS AT EASEBOURNE, MIDHURST, SUSSEX.

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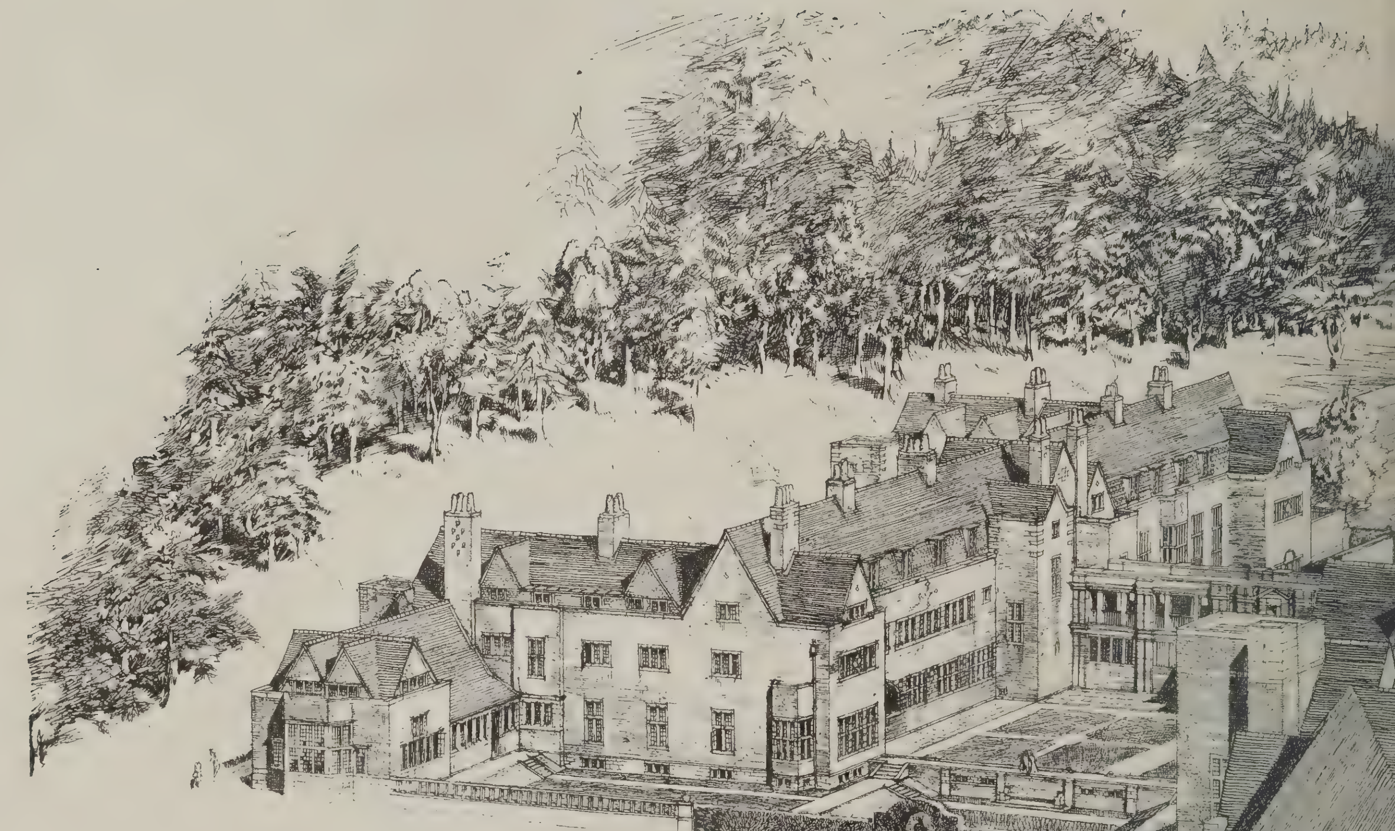

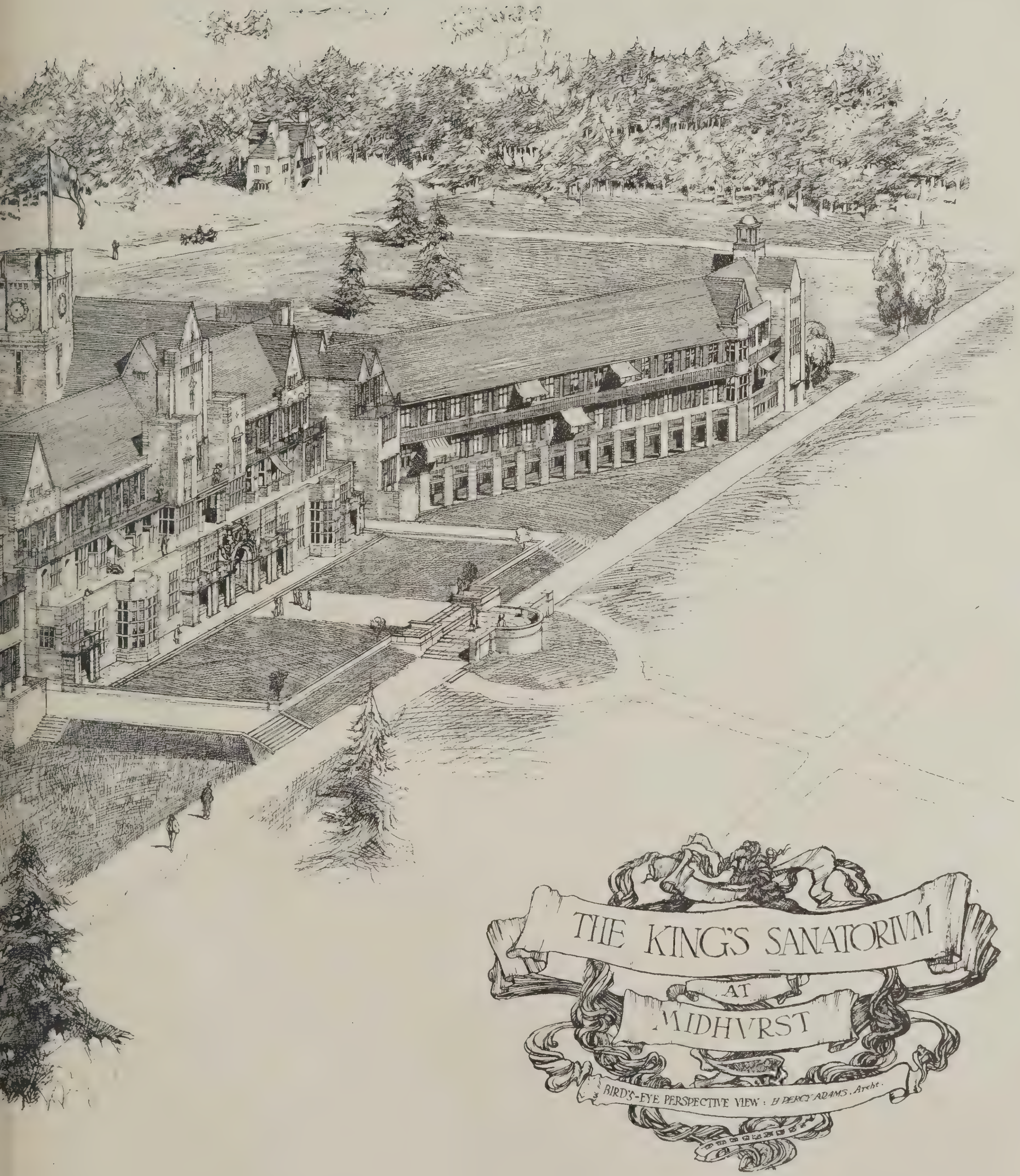
THE KING'S SANATORIVM
AT
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BIRD'S-EYE PERSPECTIVE VIEW : H PERCY ADAMS . Archt.

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housing stock, as I do not intend to waste your time with fowl-houses, and, of course, permanent sheep-folding yards are now acknowledged as a mistake and have become obsolete.

### The Dairy.

My paper might not seem complete, however, without some slight allusion to dairies. I shall only mention one or two details of a housewife's dairy, where butter is made but occasionally and in small quantities. Of course it should have its main window north, but to get a fresher current of air I like another window east or west, which can be sheltered by bushes grown outside should it prove too hot. To maintain an even temperature, the walls should be hollow and the roof of thatch or plain tiles—certainly not slated.

A settling-room should be provided with wide slate shelves around the walls, but not close up to same, a little space being left for the freer passage of air about the pans. It is customary to whitewash dairies throughout, but the whitewashing had better not extend down to the shelves, or, the pans being pushed carelessly back, will flake it off and give you the real comic-paper article of milk with chalk in it. Two rows of any kind of tiles will obviate this. It is impossible, of course, without artificial heat to maintain a temperature of 58 degs. Fahr., but this temperature should be striven for as nearly as possible, as at it milk gives off 40 per cent. more cream than the same quantity at 30 degs. Fahr.

The butter-making department must have no drain inside the building, but the floor should slope to a channel outside the building, conducting into a gulley. The ceilings in all cases must be ceiled, and everything conducive to the greatest cleanliness. The gauze should be on frames fixed outside the windows and easily removable for cleaning.

I feel that it hardly falls within the province of this paper to discuss farmhouses and their cottages, so I will content myself with throwing out only two or three hints for your guidance. Do not waste your client's money in providing a second sitting-room and laying on hot and cold water for a farm of a hundred acres. On the other hand, you will never get a tenant for a farm of larger acreage unless most of the luxuries to be found in a modern two-sitting-room house are present.

Do not again, in striving after compactness, put your house so close to the stock-sheds that after its erection one or other is proclaimed by the sanitary authorities to be uninhabitable. This may sound very superfluous advice, but I have known such cases, and remember that there is in this country a very tender bias towards progressiveness, so that in twenty years' time it may be deemed necessary to have the malodorous pig-sty 50yds. from the dwelling-house, instead of 30yds. as at present.

Finally, in labourers' cottages do not put in less than a 24 gal. copper, or they will not be able to brew enough to fill an 18 gal. cask at a time, a serious inconvenience, and one which I feel the importance of, having had to remove the smaller coppers provided in some cottages that I built and put in larger.

A discussion followed in which Messrs. H. P. G. Maule, W. C Weymouth, Cecil H. Hooper, H. Tanner, junior, M. G. Pechell, W. A. Forsyth, F C. Mears, H. Lovegrove and R. S. Balfour took part. It was generally agreed that what has been called the "model" plan for farm buildings was unsuitable and insanitary. Mr. Maule suggested that it was very desirable that rainwater should be carefully collected in a large tank, as farmers preferred to use rainwater; and that it was best to choose a site well sheltered by trees if possible.

# Correspondence.

## "Scientific Masonry."

*To the Editor of* The Builders' Journal.

Sir,—With further reference to the above, and in explanation of the question raised by Mr. Barham, the illustration of the elliptical arch in your issue for October 28th is parallel in the direction of the rays of the sliding trammel. If Mr. Barham wishes to see the arch equal at the approximately normal joints, then I will fully explain this on a drawing in a future issue of your journal; in which case my arch will be no longer parallel. I did not claim that the joints on my drawing were normal to the curve. See my final remark, and in proof of this I gave as an instance v v w, a simple and ready method of producing joints sufficiently normal for all practical purposes. Had I resorted to foci for intrados and foci for extrados, to have described these approximate normals—which, by the way, are not necessarily normal the one to the other—I should only have been able to take the mean between the two. Now that I have shown a more ready method, I am told that I have very little knowledge of the subject.—Yours truly, JOHN WORNELL.

*To the Editor of* The Builders' Journal.

London, N.

Sir,—The point at issue between Mr. Wornell and myself involves no question of personal opinion, but simply one of fact. In my previous letter I stated that ellipses could not be drawn parallel to each other; the truth of this statement is demonstrated in nearly all works devoted to conic sections and plane curves. Mr. Wornell says he has "done it." That may be his opinion, and it is shared by many people who know little or nothing of the properties of the ellipse; but the opinion of such is easily refuted by mathematical facts. Mr Wornell's remarks about normals are wholly beside the mark, and simply show that he is not even familiar with the meaning of the term as applied to any curve other than a circle. The fact of the ellipse being one of the conic sections does not render it necessary or advisable to make use of geometry of three dimensions when investigating its properties. The ellipse is a plane curve, and is treated as such by all geometricians who attempt to discuss it. Hence Mr. Wornell's solicitude for my students of solid geometry is unnecessary. Mr. Wornell, referring to a previous issue of your journal, states that he does not intend to touch upon elementary principles involved, but when he says that a curve has properties which it has not, and *vice versa*, he does touch upon such principles, and may do more harm than good to many serious students who read his articles hoping to get reliable information.—Yours truly,

G. R. BARHAM.

*To the Editor of* The Builders' Journal.

Bedford.

Sir,—Referring to the discussion on this subject, it is obvious on referring to the diagram originally given that the sliding trammel in the position shown (dotted) is decidedly not normal to the curves, whereas when at o or n it is normal; but the length of trammel remaining the same, the space between the two ellipses must vary, so that they are not parallel. This will also be proved practically by measuring the space between extrados and intrados when set out in the manner described.—Yours truly,

HUBERT HULME.

*To the Editor of* The Builders' Journal.

Wolverhampton.

Sir,—I quite agree with Mr. Barham. Mr. Wornell is evidently wrong, as anyone with any knowledge of geometry knows what a normal to an ellipse really is. Also, no ellipse can be drawn parallel to another ellipse, because each separate ellipse has different foci. Sometimes the outer curve is made parallel to the inner curve by the normals being equal from inner to outer curve. The foci to the ellipse are not shown in the diagram given: therefore the point o may be misleading.—Yours truly, H. COX,

Teacher in Building Construction.

## "Dinging."

*To the Editor of* The Builders' Journal.

London, E C.

Sir,—I do not agree with the two replies which have appeared in your journal as to the meaning of the word "dinging." It is a rough internal plastering, at any rate as understood in London and neighbourhood. Dr. Murray's Oxford New Dictionary says "to ding" (in architecture) is "to cover a brick wall surface with a thin coat of mortar, trowelled smooth and pointed to imitate brickwork, not necessarily following the actual joints." That, so far, is right, except that it may be added the work is done in one coat, that the mortar should be of finely screened stone lime and sharp sand in the proportion of 1 to 2, and that it is *not usual* to trowel it smooth. If the brickwork is fairly level and the bricks are not too rough, the mortar may be laid on and then rubbed in with a piece of sacking. If the bricks are rough the dinging may be of a slightly more elaborate quality. The angles should first be prepared perpendicularly and the mortar spread in a thin coat over the wall, stopping all holes and joints to make a fairly even surface, and floating with a felt-covered hand-float to finish with a face of sandy texture—not rule-floated. The joints, which are to be recessed, are then ruled in with a steel (square or rounded) jointer. The brickwork should first be well wetted and brushed down with a stiff broom. Mortar ground in a mill is preferable. A good deal of dinging can be seen in the earlier schools of the London School Board.—Yours truly,

ARTHUR HARSTON, F.S.I.

## Chimneys overtopped by New Building.

*To the Editor of* The Builders' Journal.

London, E.C.

Sir,—I fear that "F. S. I.'s" reply in reference to the above, on p. 197 of your issue for November 11th, is misleading. It is true that under the London Building Act, 1894, section 88 (6), a building owner exercising his right to raise a party structure or any external wall built against such party structure can only do so on condition of "carrying up to the requisite height all flues and chimney-stacks belonging to the adjoining owner on or against such party structure or external wall." But this applies only locally to London. One does not by common law acquire by any length of user a right of passage for his smoke over a neighbour's house or land, except it be in a defined channel Read the following from the "Law Times," 20th and 27th October, 1888:

*Question:* "A and B are respectively owners of neighbouring houses of equal height in a country town, aged about 50 years. B has lately raised his house so as to cause A's chimneys to smoke. Has A any remedy?—J."

*Answer:* "A appears to have no remedy against B. See *Bryant* v. *Lefever*, 4 C.P. Div. 172 (a case similar to that of A), and *Webber* v. *Bird*, 13 C.B., N.S. 844, with the remarks of Willes, J., in the court below, 10 C.B., N.S 284.—H. Astley Roberts."

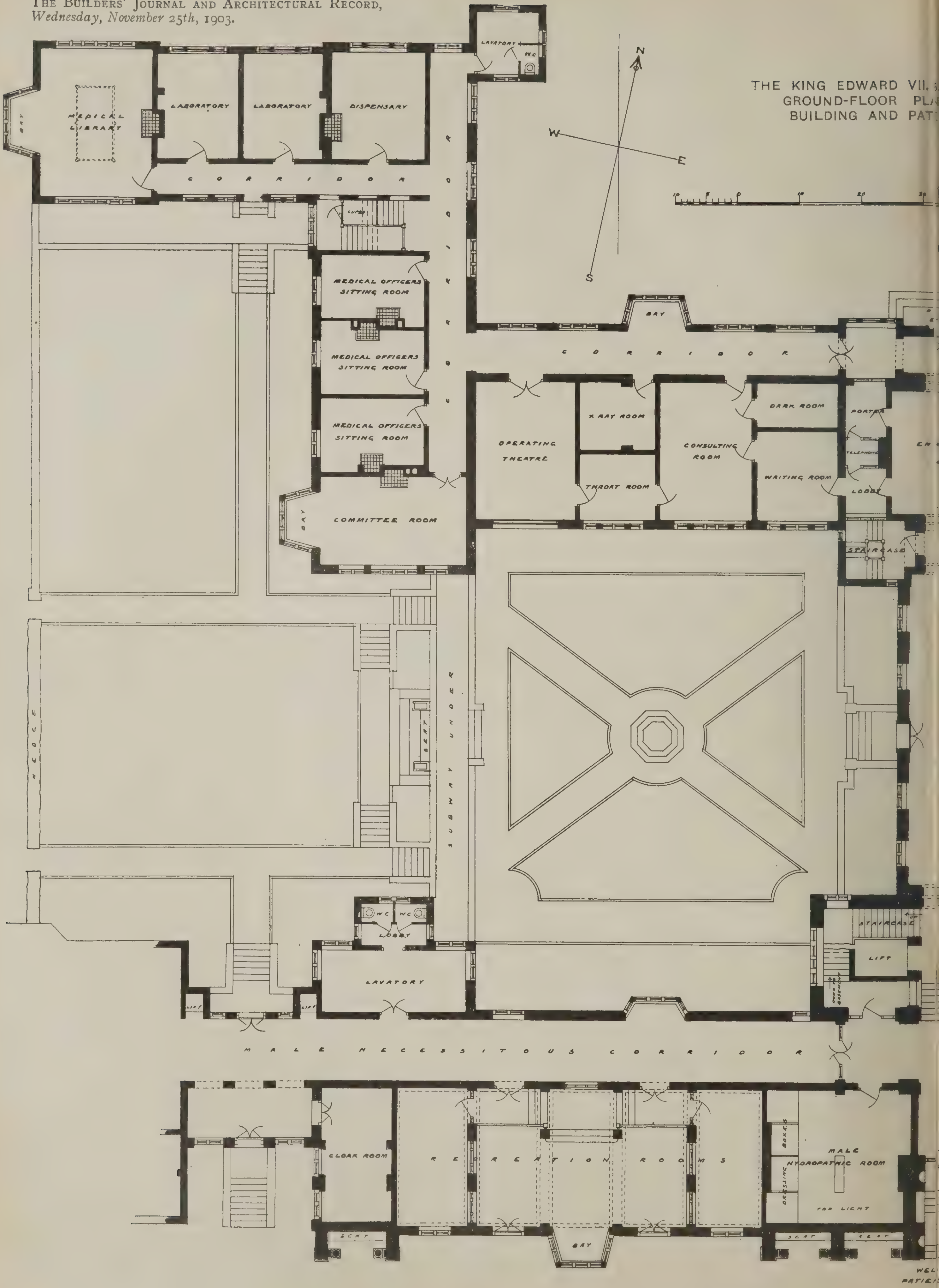
Another correspondent, "T. H. B S.," also replied, referring to *Bennett* v *Hughes*, decided July, 1886, which he said would show "that A is without remedy, and which case seems analogous to *Webb* v. *Bird*."

Whether Scots law is the same or differs I do not know.—Yours truly,

ARTHUR HARSTON, F.S.I.

THE BUILDERS' JOURNAL AND ARCHITECTURAL RECORD,
*Wednesday, November 25th, 1903.*

THE KING EDWARD VII.
GROUND-FLOOR PL
BUILDING AND PAT



TORIUM AT MIDHURST:
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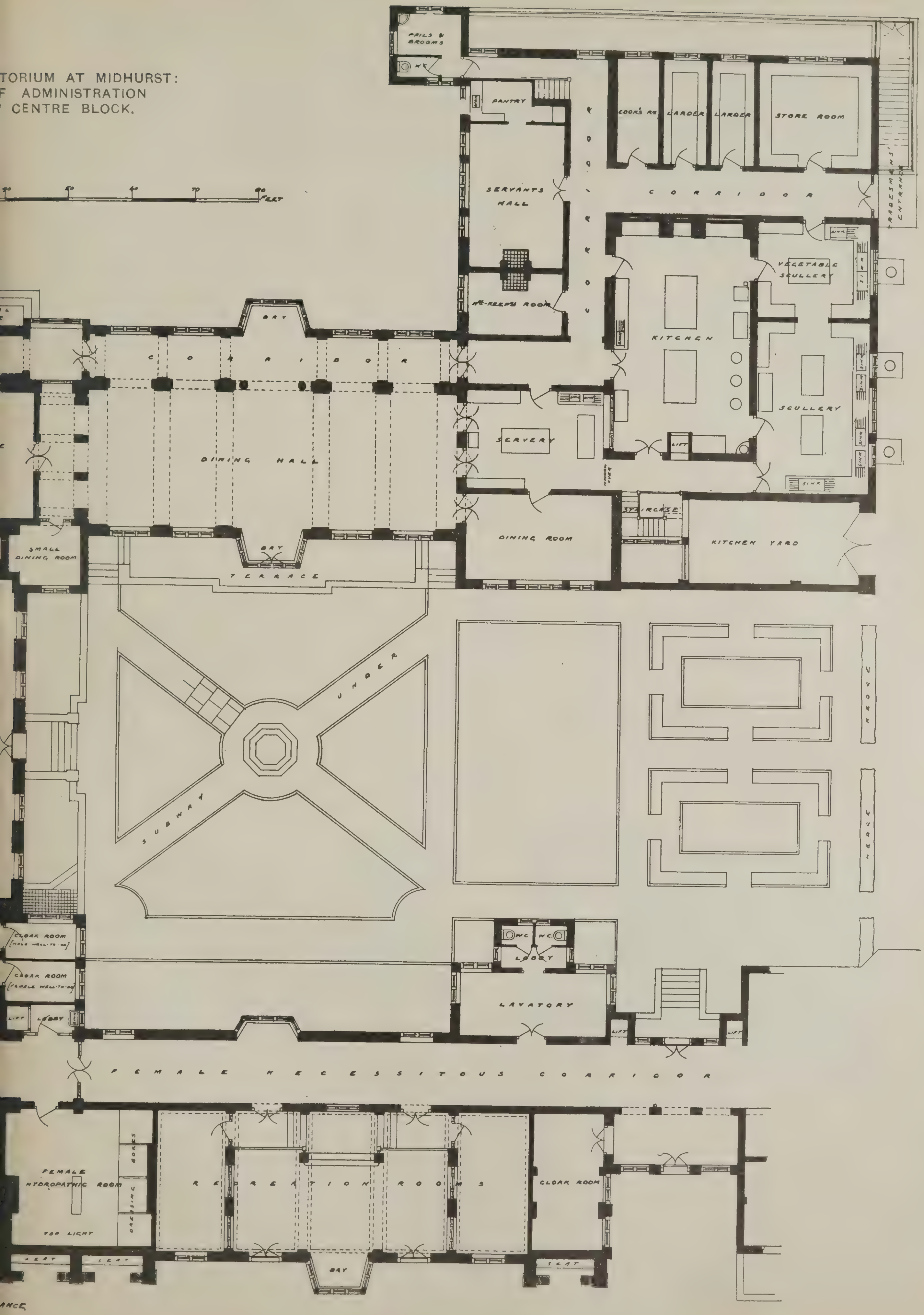
CENTRE BLOCK.



# Builders' Notes.

**The Engineering Standards Committee** have appointed Messrs. Crosby Lockwood & Son, of 7, Stationers' Hall Court, E.C., as their official publishers.

**The Chapel Schools Cavalry Barracks, York,** are being warmed and ventilated by means of Shorland's patent Manchester stoves with descending smoke flues, supplied by Messrs. E. H. Shorland & Brother, of Manchester.

**The Premises and Workshops** in Thornton Place, Toxteth, of Messrs. W. Thornton & Son, builders and contractors, were destroyed by fire last week. Considerable damage was done to the stock, which comprised timber and finished woodwork which was to be used in several contracts which they have.

**London Bridge Widening.**—According to the present rate of progress it is anticipated that the work of widening London Bridge, which was begun in April of 1902, will be completed about the end of next January. All the granite corbels have now been set on both sides of the bridge. Altogether there are 650 of them, each 10ft. long by $3\frac{1}{4}$ft. deep, and of an average width of 1ft. 5in.

**The Cost of Paving Glasgow.**—The report of the Master of Works for the year ending May 31st states that the cost of paving streets in Glasgow for the first time with granite or whin setts was £16,784. Repairs amounted to £64,321, and receipts £14,353, or an actual nett charge against revenue of £49,968. The total expenditure on macadamized roads during the year was £15,941, and on smooth paving £6,757. The asphalts laid during the year were Alcatraz, Limmer and Seyssel.

**A Market for Welsh Slate.**—The British vice-consul at Reval, Russia, reports that two-thirds of the imports of slate slabs into that port in 1902 came from the United Kingdom and the remainder from Germany and France. As the duty on the unfinished material is considerably less, efforts are made to import the slate in blocks and to saw them up in the country. If this experiment should prove successful, the Welsh quarries should not lose the opportunity to embark in the trade, as steps are already being taken in this direction from German sources.

**The new Savoy Hotel Extensions** will be equipped with nineteen "Otis" electric elevators. The installation comprises five powerful passenger elevators, four luggage elevators and ten service elevators; all are electric with "Otis" controllers. With the exception of two or three smaller short-rise ones, the speed of the elevators will range from 250ft. to 300ft. per minute and upwards. Regard being had to the speed and lifting capacity, the hotel as a whole, when complete, will have (counting the eight "Otis" hydraulic elevators in the existing hotel buildings) probably the largest hotel elevator installation in this country.

**Builders' Foremen's Association.** — On Saturday last a large party of members inspected the new factory at Old Ford of Messrs. John Broadwood & Sons, Ltd., the great pianoforte manufacturers. Among those present were Mr. George Thomson (president) and Mr. W. Cook (secretary). The visitors were received by Mr. George Rose, with whom was Mr. W. Hugh Spottiswoode, director of Messrs. Broadwood's. Their factory was for many years a familiar landmark in Westminster, but the lease having expired, the land at Old Ford on which the present building stands was acquired. Here, already, were large works, the old buildings of which have been adapted to the purposes of pianoforte manufacture by Mr. E. Beaumont, the architect, in consultation with the directors. New buildings have also been erected. Great interest was displayed in the many excellent devices and arrangements for labour-saving purposes. At the close of the visit a hearty vote of thanks was accorded to the directors for their kindness.

**The late Mr. S. T. Turtle,** of New Wandsworth, of the firm of Turtle & Appleton, builders and contractors, left estate of the gross value of £53,561.

**Cupboards in L.C.C. Dwellings.**—It will be remembered that on the occasion of the King and Queen's visit to the Millbank Estate her Majesty suggested that the provision of more cupboard space in the Council's dwellings would be a great boon to the tenants. Recognizing the usefulness of the suggestion, the Council on May 12th last decided to begin by having cupboards constructed in the tenements in Adelaide, Sydney and Melbourne Buildings, which had previously been erected on the Ann Street Estate. The Housing Committee now report that the work in these tenements has been completed, and that they are taking steps to ensure the provision of good cupboard space in all the Council's dwellings.

**The Building Trade in Dundee** is in an unfortunate condition. It has been found from careful investigation that the number of workmen who in ordinary circumstances earn their livelihood in the business, but who are meantime unemployed, is much larger than has been known for many years. The operatives chiefly involved are masons, joiners and labourers, but others, such as plasterers, plumbers, painters, glaziers and heating engineers are also feeling the pinch. Within recent months hundreds of young workmen, unable to find scope for their energies at home, have sought the wider fields offered by the colonies. The cause of this extraordinary depression is difficult to ascertain, but its roots seem embedded in the dual circumstance that tenement property has been over-built, and that no structures of a public character are meantime in course of erection. Within recent years a feature of the trade which has forced itself upon the notice of those concerned has been the steady and increasing tendency of those occupying central flats to move towards the suburbs. This exodus from the more thickly populated parts is regarded by the municipal authorities as excellent, but amongst investors, whose capital is sunk in property, it is a matter for concern. Tenements, as a natural consequence, must suffer depreciation in value. From the strictly industrial point of view, however, the movement has advantages, inasmuch as it will lend an impetus to the erection of self-contained dwellings. The inevitable result of this shifting has been a corresponding movement of weekly tenants into better-class properties, to many of which the system of weekly rents has recently been applied. This, in turn, has involved the desertion of the older and less salubrious localities, in the heart of which at the moment hundreds of one-roomed houses are vacant.

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**The Stockport Town Hall Competition** has been decided. The assessor, Mr. T. E. Collcutt, F.R.I.B.A., has awarded the first premium of £100 to Mr. A. Bramwell Thomas, of 5, Queen Anne's Gate, Westminster; the second premium of £75 to Messrs. G. Willoughby and J. Langham, of 110, King Street, Manchester; and the third premium of £50 to Mr. Henry T. Hare, of 13, Hart Street, Bloomsbury Square, London. The designs of Mr. C. R. Locke, of St. Peter's Square, Stockport, and of Messrs. Briggs and Wolstenholme, of Blackburn and Liverpool, were placed fourth and fifth respectively. It was a condition that the town hall should not cost more than £70,000.

# EFFICIENT PLUMBING.

### Conference at the Guildhall.

A CONFERENCE between the Plumbers' Company, representatives of the larger water authorities of the country, and the Royal Institute of British Architects was held last week at the Guildhall to discuss the question of the technical education and registration of plumbers and the efficiency of plumbing work generally in connection with the public supply of water. Dr. Robert Crawford (warden of the Plumbers' Company) occupied the chair. The Institute was represented by Mr. H. D. Searles-Wood, Mr. Thomas Blashill and Mr. W. D. Caröe, and the British Association of Waterworks Engineers by its secretary (Mr. Percy Griffith).

The chairman moved a resolution approving the efforts of the Plumbers' Company to secure the more efficient training of plumbers and the registration of qualified men, and pledging the conference to support the company's endeavours to obtain the necessary legislation in furtherance of that object.

Mr. Hind, in seconding the resolution, said he hoped that architects and others would support the company by employing registered and qualified plumbers in preference to others.

The chairman mentioned that the Bill promoted by the company for the registration of plumbers had been viewed favourably by the Local Government Board, but the Government had not seen their way to afford the necessary time to secure its passage through Parliament.

The resolution was carried.

Mr. Searles-Wood said that as architects they strongly sympathized with the movement for the better education of plumbers. He did not think, however, that they could pledge themselves to the sole employment of registered plumbers, because architects did not interfere between the contractor and his men. He afterwards proposed: "That, with the object of giving practical effect to the previous resolution, the representatives of the Royal Institute of British Architects and the water authorities present recommend that preference be given to the employment of registered plumbers to carry out and inspect plumbers' work executed under architects and water authorities." In the course of further remarks he said that the Institute deprecated any interference with the apprenticeship system. It was one thing to execute specimen joints and other things under the direction of a master in a highly-fitted-up shop at a technical school, and another matter to do it under the ordinary conditions in which the work had to be done in a building.

Mr. Holdsworth (Bradford) seconded the resolution.

Mr. E. A. Lees (Birmingham) said that in Birmingham there were a good many firms of the highest repute who had not allied themselves with the registration movement, and the Water Board could not shut their eyes to the fact that those firms carried out their work in a way to which no exception could be taken.

Mr. Atkinson (Hull) said that the same difficulty would arise in his town. If registration was to be adopted, it should be optional for a period, and only compulsory after the lapse of several years.

After further discussion, the resolution put by Mr. Searles-Wood was carried.

The questions of uniformity of regulations and the standardization of fittings were afterwards discussed, and it was decided to appoint a small committee representing the Plumbers' Company, the Institute, the water authorities and the water-company engineers to consider the matter.

# Electrical Notes.

### "Electrical Fires."

There is nothing that so gladdens the heart of the editors of gas journals as any suggestion by which the responsibility for a fire may be fastened on to the electric current. Perhaps this is reasonable, considering the number of fires directly attributable to gas explosions throughout the year; and while these stories may serve as a useful red-herring, nevertheless, and even if true, there is much of the beam and mote order about them. But as a rule they will not bear investigation, and such no doubt is the case with the one reported in the "Journal of Gas Lighting" of November 10th. From this we learn, according to the letter of a sapient Scotch correspondent, that a fire which broke out in Buchanan Street, Glasgow, "was the result, *it is believed*, of the fusing of an electric wire." (The italics are ours.) This gentleman proceeds to say that in all the accounts he has been able to see of the matter the origin of the fire is never alluded to, except in one paper in which the electric wire theory is given. This he takes as a text for pointing out that the causes or origins of fires are not now alluded to in reports, and he sermonizes at length on the point, building up a theory of collusion between municipal electrical and fire-brigade officials and the newspapers. But, absurd as this may seem, he makes no attempt to enquire into or prove the innuendo thrown out, and so, many readers will doubtless become convinced that the fire actually was caused by the current. Such are the ways of the gas people. We shall have something to say shortly on the little bills which are being sent round to consumers giving so-called comparisons between incandescent gas light and electric light.

### Machine-made Wall Plugs.

Although not a purely electrical subject, we may be excused for referring in these notes to the device now being sold by the Improved Plug Co., of Manchester. Perhaps in no other branch of the building trade has so much plugging of walls to be done as in wiring work in order to secure fixings for fittings, accessories and casing. Accordingly the machine-made plug will be welcomed as another step towards efficiency and time-saving. The plugs are made of hard seasoned wood, in three stock sizes; one end is fitted with an iron ferrule to prevent splitting, whilst the other end has a wedge to expand the plug. The price is quite reasonable and will more than compensate for the time lost in making rough-and-ready plugs on the job.

### Contractors' Motors.

Last month we referred to the possibilities of electric motors for building work, where supply mains were available, and deplored the fact that such small advantage was taken of this source of energy. We learn that the contractors for the tunnels of the Hampstead and Charing Cross Railway, Messrs. Price & Reeves, are running two single-phase 100-h.p. motors off the Hampstead municipal mains, in connection with the shafts at Belsize and Golder's Green Stations. The machines were supplied by the Fuller-Wenström Co. and Messrs. Mather & Platt, and are said to give every satisfaction for the duty which they are carrying out in preference to portable steam cranes. They start easily under load, a thing that could not be said of single-phase motors until quite recently.

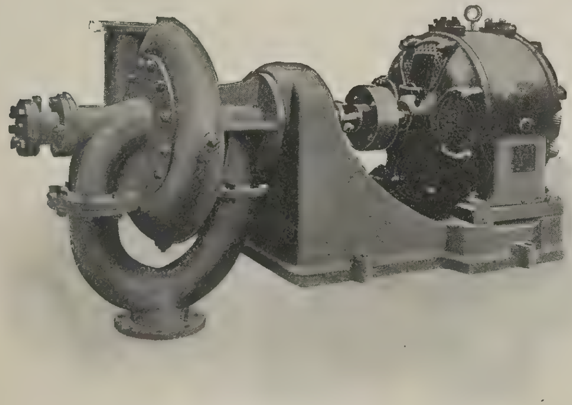
### A new Arc Lamp.

From America it is announced that a further development has been made in arc lighting. Certainly novelties in the electric illuminating line have not been scarce during the last two years, and no doubt the revival of progress has been due to the stimulation afforded by the incandescent gas mantle. The lamp in question is an "open" arc lamp (*i e.*, one that does not burn in vacuo), and the electrodes consist of a rod of copper and another of so-called "magnetite," whatever that may be. The copper does not burn away at all, whilst the 8in. of "magnetite" are consumed in 150 hours. It is said that the lamp is half as efficient again as the ordinary carbon arc lamp, but it cannot burn indoors, owing to a smoky deposit produced by the electrodes. No doubt this trouble will be remedied in due course, but the gain in efficiency is certainly an important one. A.M.I.E.E.

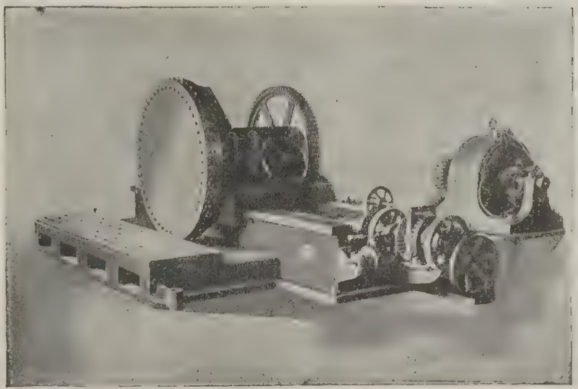
**Electricity in the Cottage.**—At the Rhenish town of Anrath, cottage hand-weaving has hitherto been extensively, though not very profitably, carried on. Since electric power has been introduced the weavers, who still work in their homes, are much better off. The average price of a loom is £40, and the electric power per loom amounts to about £3 per annum. In addition to a much higher productive capacity, the new system requires less exertion on the part of the operator, and is a decided gain from a sanitary point of view.

**A new Electric-Lighting Station at Exeter** is being erected at a cost of £14,000. The electric installation is by the British Westinghouse Co., the sub-contractors being Messrs. Babcock & Wilcox and Messrs. Willey & Co. The building contractors are Messrs. W. Brealy & Son, of Exeter, and the architect is Mr. D. Cameron, of Messrs. Cameron, Commin & Martin. The area covered by the works is 12,000 sq. ft. The engine-room is 105ft. by 45ft. in width, with a height of 50ft. It is faced with glazed bricks of French grey colour, with chocolate dado.

Westinghouse
Motors.
Alternate or Direct Current.



Westinghouse Motor-operating Pump.



Westinghouse Motor-operating Planer.

Write for Circulars No. B 1070 and B 1071.

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Electric & Mfg. Co., Ltd.

Head Offices:
London, Norfolk St., Strand, W.C.

Branch Offices:
Manchester, Glasgow,
Birmingham, Cardiff, Sheffield,
Newcastle-on-Tyne.

Works:
Manchester, Trafford Park.

# Tenders.

*Information from accredited sources should be sent to "The Editor" at latest by noon on Monday if intended for publication in the following Wednesday's issue. Results of Tenders cannot be accepted unless they contain the name of the Architect or Surveyor for the work.*

*Addressed postcards on which lists of tenders may be stated will be sent post free on application to the Manager,* BUILDERS' JOURNAL, 6, *Great New Street, Fetter Lane, E.C.*

**Bristol.**—For the erection of a central library, for the Corporation. Mr. H. Percy Adams, architect, 28, Woburn Place, W.C., London :—

| | |
|---|---|
| Longley & Co. | £34,979 |
| R. F. Ridd | 31,985 |
| A. J. Beavan | 31,900 |
| Kerridge & Shaw | 31,817 |
| Stephens & Bastow | 31,6 8 |
| Cowlin & Son | 30,894 |
| R. Wilkins | 30,676 |
| Walters & Son | 30,470 |
| H. Wilcox* | 29,765 |

* Accepted. [Architect's estimate, £30,000.]

**Cardiff.**—For erection of new schools, Llanishen Street, the Heath, for 1,500 children, for the Cardiff School Board. Messrs. Veall & Sant, architects :—

| | |
|---|---|
| Shepton & Son | £18,623 |
| D. Davies | 18,239 |
| W. Thomas & Co. | 16,417 |
| E. R. Evans & Brothers | 16,277 |
| J. Allan | 15,724 |
| C. C. Dunn | 15,600 |
| Symonds & Co. | 15,411 |
| Knox & Wells | 15,400 |
| W. T. Morgan | 15,050 |
| Lattey & Co., Ltd. | 14,832 |

* Accepted subject to the approval of the Board of Education.

**Darenth (Kent).**—For sanitary and other works at the Asylum, for the Metropolitan Asylums Board :—

| | | | |
|---|---|---|---|
| H. Munn & Son, Clapham Common, S.W. | £16,380 | 0 | 0 |
| M. Batchelor, Maidstone | 11,285 | 0 | 0 |
| Gardner & Hazell, Islington, N. | 10,561 | 0 | 0 |
| Vigor & Co., Poplar, E. | 10,440 | 0 | 0 |
| T. H. Hayes & Co., Lee, S.E. | 10,266 | 15 | 2 |
| J. Lonsdale, Swanley Junction | 9,200 | 0 | 0 |
| Doulton & Co., Ltd., Lambeth | 9,080 | 0 | 0 |
| W. Titmas & Sons, London, W.C. | 7,621 | 0 | 0 |
| T. Cole, London, N. | 7,335 | 0 | 0 |
| Enness Brothers, Erith | 7,179 | 0 | 0 |
| A. H. Inns,* London, E.C. | 7,039 | 0 | 0 |
| W. O. Collingwood,† S.E. | 6,700 | 0 | 0 |

* Accepted. † Withdrawn.
[Engineer's estimate, £6,500.]

**Eastbourne.**—For buildings covering refuse-destructor, Roselands, for the Corporation. Mr. D. J. Bowe, borough surveyor :—

| | |
|---|---|
| Cook & Sons | £1,533 |
| J. Martin | 1,475 |
| M. Hookham,* Eastbourne | 1,178 |

* Accepted.

**Gillingham (Kent).**—For the erection of twenty-six cottages in Burnt Oak Terrace. Mr. Ernest J. Hammond, C.E., M.S.A., architect and surveyor, 21, Balmoral Road, Gillingham :—

| | | |
|---|---|---|
| J. A. Davison, West Malling | £7,100 | 0 |
| H. Philbey, Grays | 6,500 | 0 |
| Gann & Co., Whitstable | 6,295 | 0 |
| Enness Brothers, Erith | 5,888 | 0 |
| H. J. Galer, Leigh-on-Sea | 5,623 | 10 |
| H. Harris, Gillingham | 5,434 | 0 |
| C. Jordan, Herne Bay | 5,070 | 0 |
| A. S. Ingleton, Herne Bay | 4.875 | 0 |
| W. W. Hammond, Gillingham | 4,823 | 0 |
| J. Wilford,* Snodland | £4,810 | 0 |
| E. W. Filley,† Chatham | 4,485 | 0 |

* Accepted. † Withdrawn.

**London.**—For the enlargement of Essendine Road School, Maida Hill, for the London School Board. Mr. T. J. Bailey, architect :—

| | |
|---|---|
| G. S. S. Williams & Son | £6,970 |
| C. F. Kearley | 6,852 |
| J. Simpson & Son | 6,804 |
| Johnson & Co. | 6,763 |
| Marchant & Hirst | 6 729 |
| H. Wall & Co. | 6,657 |
| W. M. Dabbs & Son | 6,642 |
| G. Neal | 6 595 |
| Rice & Son | 6,549 |
| McCormick & Sons | 6,424 |
| Patman & Fotheringham, Ltd. | 6,283 |
| Stevens Brothers | 6,256 |
| Treasure & Son | 6,127 |
| General Builders, Ltd.* | 6,074 |

* Recommended for acceptance.

**London.**—For erection of higher-grade school and improvement of existing graded school, Mina Road, Old Kent Road, for the London School Board. Mr. T. J. Bailey, architect :—

| | |
|---|---|
| J. Grover & Son | £18,354 |
| Martin, Wells & Co, Ltd. | 18,100 |
| J. Marsland & Sons | 18,017 |
| J. Greenwood, Ltd. | 17,985 |
| Johnson & Co. | 17,953 |
| W. King & Son | 17,900 |
| Clarke & Bracey | 17,852 |
| E. Lawrance & Sons | 17,562 |
| Lathey Brothers | 17.519 |
| Stimpson & Co. | 17,490 |
| J. Carmichael | 17,439 |
| J. & M. Patrick | 17,304 |
| Treasure & Son | 17,048 |
| L. H. & R. Roberts | 16,998 |
| J. Garrett & Son | 16,977 |
| Thomas & Edge | 16,328 |
| W. Smith & Son | 16,058 |
| W. J. Mitchell & Son | 16,020 |
| F. & H. F. Higgs | 15,917 |
| W. Downs* | 15,739 |

* Recommended for acceptance.

**London.**—For forming new passage way, rebuilding infants' offices, &c., at Chaucer School, Tabard Street, Borough, for the London School Board. Mr. T. J. Bailey, architect :—

| | | |
|---|---|---|
| W. Downs | £1,875 | |
| J. W. Falkner & Sons | 1,861 | 0 |
| J. Peattie | 1,824 | 0 |
| R. B. Beattie | 1,807 | 12 |
| G. Parker | 1,774 | 0 |
| W. V. Goad | 1,698 | 0 |
| Rice & Son | 1.651 | 0 |
| J. & C. Bowyer | 1,642 | 0 |
| Maxwell Brothers, Ltd. | 1,633 | 0 |
| Johnson & Co. | 1,623 | 0 |
| Lathey Brothers | 1,568 | 0 |
| W. J. Mitchell & Son* | 1,374 | 0 |

* Recommended for acceptance.

**London.**—For the adaptation of premises for centres for physically and mentally defective and blind children at Powis Street School, Woolwich :—

| | |
|---|---|
| J. Smith & Sons, Ltd. | £4,210 |
| E. Proctor & Son | 4,170 |
| Johnson & Co. | 4,099 |
| W. J. Mitchell & Son | 4,087 |
| J & C. Bowyer | 3,986 |
| Lathey Brothers | 3,930 |
| Holliday & Greenwood | 3,915 |
| T. D. Leng | 3,778 |
| E. Triggs | 3,671 |
| Thomas & Edge | 3 628 |
| H. Groves | 3,592 |
| E. P. Bulled &Co. | 3:477 |

* Recommended for acceptance.

**London, S.W.**—For the reconstruction of slipper-baths at the Marshall Street establishment, including provision and fixing of new baths, valves and supply pipes; also new floor and sanitary work, for the Westminster City Council. Mr J. W. Bradley, C.E., engr. :—

| | |
|---|---|
| Stubbs-Alexander, Ltd. | £5,977 |
| Harding & Son | 5 900 |
| Patman & Fotheringham | 4,753 |
| Davis and Bennett | 4,600 |
| Sabey & Son | 4,600 |
| Hall, Beddall & Co. | 4,420 |
| J. Ferguson & Co. | 4,250 |
| B. E. Nightingale | 4,057 |
| Doulton & Co., Ltd.* | 3,980 |

Electric lighting.

| | |
|---|---|
| Slatter & Co. | 273 |
| Bolding & Son | 256 |
| Laing, Wharton & Co. | 237 |
| A. H. Wood* | 228 |

* Accepted.

**Luton.**—For the erection of a factory at rear of warehouse, George Street, for Mr. J. Eustace. Mr. A. Wilkinson, architect, 84, Inkerman Street, Luton. Quantities by Messrs. R. E. Carpenter & Son, Leicester :—

| | | |
|---|---|---|
| T. & E. Neville | £1,530 | 0 |
| Foster | 1,526 | 0 |
| G. Angel | 1,521 | 0 |
| G. Buckingham† | 1,500 | 0 |
| Mallet & Wood | 1,489 | 0 |
| G. Pryer | 1,470 | 0 |
| G. Kingham | 1,455 | 10 |
| Saunders & Son | 1,455 | 10 |
| A. Attwood* | 1,398 | 0 |

* Accepted. † Received too late.

**Maindy (near Cardiff).**—For the erection of an infants' school, for the Llandaff School Board. Mr. G. E. Halliday, F.R.I.B.A., architect, 14, High Street, Cardiff. Quantities by Mr. J. W. Rodger, 14, High Street, Cardiff :—

| | | | |
|---|---|---|---|
| A. W. Cadwallader | £2,993 | 12 | 0 |
| W. Cox, Llandaff | 2,547 | 10 | 0 |
| Lattey & Co. | 2,464 | 4 | 8 |
| Blacker Brothers | 2,434 | 0 | 0 |
| C. C. Dunn* | 2,346 | 13 | 7 |

* Accepted. [Rest of Cardiff.]

**Pontypridd.**—For the construction of a road, viaduct and bridge, for the Urban District Council Mr. R. P Wilson, engineer, 66, Victoria Street, S.W. :—

| | |
|---|---|
| Heenan & Froude | £16,821 |
| A. Thorn† | 16 658 |
| Hughes & Stirling | 15,384 |
| E. Finch | 15,190 |
| Clark & Co. | 14,679 |
| J. E. Evans | 14,550 |
| A. Seaton | 12,810 |
| Bott & Stennett, Westminster* | 12,387 |
| Westwood & Co.‡ | 5,831 |

† Incomplete. ‡ For steelwork only.
* Accepted.

**Wallingford.**—For the erection of administration block for the Wallingford and Crowmarsh Joint Hospital Board. Mr. Samuel Johns, M.S.A., architect and surveyor, Sand Chambers, Friar Street, Reading :—

Contract No. 1.

| | | |
|---|---|---|
| Hughes, Wokingham | £1,299 | 0 |
| Brasher & Son,* Wallingford | 1,180 | 0 |
| Bosher & Son, Cholsey | 1,098 | 10 |
| Gibson & Son, High Wycombe | 1,078 | 0 |

* Accepted. [Architect's estimate, £1,160.]

Contract No. 2. For drainage, &c.

| | | |
|---|---|---|
| Hughes, Wokingham | 450 | 0 |
| Gibson & Son, High Wycombe | 420 | 0 |
| Osenton, Tilehurst | 377 | 0 |
| Bosher & Son, Cholsey | 345 | 0 |
| Brasher & Son,* Wallingford | 312 | 0 |

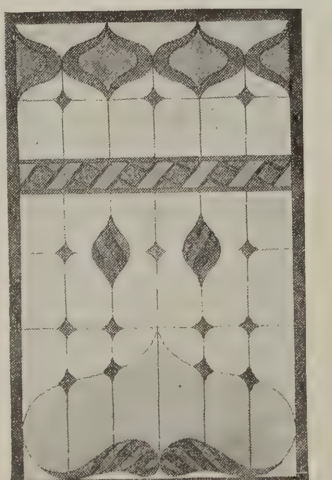
* Accepted. [Architect's estimate, £350.]

(*Continued on p.* 232 ]

**A Burglar's Attempt Defeated.** ON October 13th, 1903, a serious attempt was made to enter the foreman's room, and also the office of the clerk of works, at the Bristol Waterworks Co.'s New Building, Telephone Avenue. The foreman's door, secured by a lock of ordinary pattern, yielded to their efforts. A most determined attempt was also made to force the lock securing the door of the clerk of work's office. However, this lock, which was fortunately one of "Rodney's" Imperial Patent Locks, successfully held its own, and the burglars, after doing considerable damage to the door, retired baffled. Next morning all were astonished to find that any lock could have resisted the powerful "jemmy" and other tools which had evidently been used to force it, and that it was working on the door as good as ever. These good locks can be obtained wholesale of the manufacturer, Mr. Robert Rodney, Orchard Street, St. Augustine's, Bristol, or the works at Willenhall.

Mr. Ashley, clerk of the works, 138, City Road, Bristol, is willing to verify the above.

"CLOISONNE GLASS"



A new decorative material transparent and opaque.

The CLOISONNE GLASS CO.

66E Berners St. Oxford St.
London W.

prices from 3/- per square foot

# THE SOCIETY OF ARCHITECTS.

### President's Address.

THE first meeting of the session 1903-4 of the Society of Architects was held at St James's Hall, Piccadilly, W., on Thursday last. The president (Mr. Walter W. Thomas), in opening the proceedings, referred to their late president, Mr. Silvanus Trevail, whose sudden death was a matter of deepest regret to the Society, with which he had been connected for eighteen years, having been also a Fellow of the R.I.B.A. for ten years. A vote of condolence to the relatives was unanimously passed.

The following elections took place :—

As *Hon. Member:*

Col. C. O. Ellison (Liverpool), past-president.

As *Members:*

F. J. Bellamy (Yeovil)
A. B. Brown (London, W.C.)
P. M. Du Feu (Ventnor)
S. D. Edmunds (St. Albans)
W. L. Hill (Leeds)
H. W. Hillier (Westminster)
A. B Houchin (London, W.C.)
W. H. James (London, W.C.)
R Ll. Jones (Carnarvon)
C. Mitchell (Edinburgh)
W J. McWilliams (Port Elizabeth)
G. Meek (Manchester)
W. H. Winder (London, W.C.)

As *Students:*

C. E. Ardley (West Kensington)
W. H. Evans (Southampton)
W. S. Mackintosh (Southampton)
J. Peascod (Carlisle)
O. G. Bond (Stamford)
H. L. Webb (London, W.)
E. Shirreffs (Greenwich)
I. A. Simpson (Warrington)
J Stalker (Johannesburg)
J. Stewardson (Carlisle)

The balance-sheet for the year ending October 31st last, showing a reserve fund of £700 and a surplus of more than £1,100, was adopted.

Mr. Walter W. Thomas, of Liverpool, then delivered his presidential address. In referring to

### Architectural Education,

he spoke of the gradual development in this country during late years of schools of architecture, and the institution of Chairs of Architecture in connection with the Universities of Liverpool and Manchester, the former being the first of the kind in Great Britain. Most of the allied societies afforded facilities for gaining knowledge, the Leeds and Yorkshire Society being perhaps the most prominent with a new scheme which had every indication of being successful. And he trusted that before long the University of Wales at Aberystwyth would have its School of Architecture. The new School of Architecture in London in connection with the Architectural Association deserved the hearty support of the profession; its curriculum was unique and its scheme admirable. In Ireland also the question of architectural education was receiving consideration; but, after all, these praiseworthy efforts did not much more than touch the fringe of the profession, for the reason that the system was a voluntary one, and until schools of architecture were State supported—or, in other words, a system of statutory education was established—it was hopeless to expect that more than a small proportion of students would avail themselves of the advantages now open to them.

The consideration of this matter naturally brought him to the statutory registration of architects. He said the principle of registration was one against which no valid objection had ever been made; it was only when it became a question of carrying that principle into effect that objections were raised on certain points by those who were so bigoted and prejudiced as to be unable to consider the matter from any point of view other than their own narrow one, and who endeavoured to obtain a cheap popularity by the easy way of indiscriminate condemnation of a measure of the clauses of which it was evident they knew nothing at all. No amount of argument could get over the fact that the profession was practically solid on the principle of registration, and when it came to fighting out the details the common-sense of the majority was bound to win.

Straws showed which way the wind was blowing, and recent events in Ireland and elsewhere made it plain that the senior body was acting against its own interests in not fairly and squarely facing the question of registration. It was encouraging to find the president of the R.I.B.A. making registration the principal theme of his address, and to have his assurance that the Royal Institute was in sympathy with every effort to raise the status of architecture and architects in this country, which of course included the registration movement; but it was evident that the only practical way of obtaining the desired end, namely, by Parliamentary powers, would not be sought by the Institute until it had tried every other possible scheme.

The proposal to form a Board of Architectural Education, if carried out, might be useful in focussing and controlling the efforts of the various schools of architecture throughout the country, but it would do nothing at all to remedy the grievances which admittedly existed in the practice of architecture.

Such a scheme would not at all appeal to practical men, who were aware that nothing less than statutory powers would enable any authority to cope with such an important matter as the education and consequent necessary registration of architects.

### Holborn-Strand Building Conditions.*

Speaking of the building restrictions imposed in connection with the Holborn-Strand improvement Mr. Thomas said: "Those who have read the conditions of sale will see at once that they are of a character calculated to make the boldest hesitate. The decision on any point afterwards arising is in the hands of the Council's architect, from which there is no appeal. The objection is not a personal one to the architect as such, but to the principle which places so much power in the hands of an official. There must be something wrong when the opportunity to secure sites in so valuable a centre fails to attract purchasers. I think the conditions should at any rate be subject to an appeal to arbitration in case of dispute. This is a question not only for lessees, but for architects, who have to advise their clients who propose to take sites. If there is no reference to an arbitrator in case of a dispute, a client may be mulcted in a large additional expenditure he never contemplated, and this may bring him to ruin."

### The Liverpool Cathedral Competition: A Protest.

Continuing his address, the president referred to architectural competitions, the Liverpool Cathedral competition in particular, of which he said that the appointing of the assessor to act as joint architect with the author of the selected design was entirely wrong in principle and opposed to the best interests of the profession, and he considered the attention of the profession should be called to it, and that steps should be taken to bring the matter to the notice of those in authority.

The competition for the Liverpool Pierhead Baths and Tramways Offices proved a failure in the first instance, yet there were found six or seven firms of architects to enter into a second competition for baths only, without any assessor being appointed or any premium offered. Then there was the competition for the housing of the poor upon the site known as the Hornsby Street area, Scotland Road, Liverpool—another failure—the work being afterwards carried out by the Corporation's own officials.

Mr. Thomas next proceeded to note with approval the chief architectural and public improvements recently begun or completed at Liverpool—the cathedral, the Dock Offices, the new technical school, the Royal Insurance Co.'s building, the new Church House in Lord Street, the Birchfield Road Board School ("as complete an elementary school as will ever be erected"), new offices for some of the large commercial firms, and, lastly, the scheme just inaugurated by H.R.H. Princess Louise to erect labourers' dwellings at a cost of £150,000.

### Architects and the Education Act.

Whilst speaking of elementary education he particularly wished to draw the attention of architects to their position under the new Education Act. Most of the committees were formed of sub-committees of city or county councillors or urban district councils, the majority of whom seemed to think that the persons they ought to employ as architects and surveyors for their future new buildings were their city surveyors, land surveyors, county surveyors, road surveyors and other gentlemen whose particular qualifications were more of the nature of land stewards, bridge-masters and road surveyors than architects. Most of the county and city surveyors had as much work as they could possibly attend to personally, and they had had in the past no practical or personal experience of school buildings; whereas there were architects who during the last thirty years had made a particular study of school building, and the valuable experience they had gained during that period would be lost to the community if the principle he had indicated were persisted in.

Finally, speaking of ancient lights, he said the Bill drafted by the joint committee of the R.I.B.A. and the Surveyors' Institution did not seem to do much more than take the matter out of the hands of the lawyers to put it into those of the surveyors, so that the benefits to the building owner were not increased—in fact, it was rather the opposite in some cases.

# HOLBORN-STRAND IMPROVEMENT.

### The Building Conditions.

IT will be remembered that no bids were forthcoming when, in the middle of October, the London County Council attempted to sell for building purposes the surplus land in the Strand, Kingsway and Aldwych, which they had acquired in connection with the Holborn-Strand improvement scheme. This failure, which occasioned no little astonishment and very great misgivings at the time, was attributed in many quarters to the onerous character of the conditions which the authorities of Spring Gardens wished to force upon would-be speculators.

Special exception was taken to condition 13, which provides that all disputes in connection with the erection of the buildings shall be settled by the Council's architect, whose decision shall be final. It was pointed out that this would put the architect—whose integrity was not for a moment impeached—in an anomalous and embarrassing position by making him the supreme judge in a matter in which his own employers, the County Council, were interested parties.

The Corporate Property Committee have been considering whether any change in the conditions could be made, and they have resolved that the Council would not be well advised to make any alteration in its building conditions; adding the view that, although there were no bidders at the last auction, the Council will not experience any difficulty in eventually disposing of the plots under the existing conditions.

They made enquiries as to the practice which obtains in regard to the letting of land on the estates of the large ground owners of London, and were advised that the conditions in use on these estates were generally more onerous than those imposed by the Council, and that no provision for arbitration was made in the conditions.

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* See the article on this page.

The Committee take occasion to remind the Council that on May 26th last, when reporting on the question of the elevation of the buildings to front on the Strand, Aldwych and Kingsway, they recommended that, in the event of disagreement, the lessee should be allowed to consult with certain architects with a view to his submitting an amended design, and that, should the amended design not be approved, the designs should be submitted to the Senior Architectural Royal Academician for his decision. The Council did not adopt that recommendation, but decided that the design should be such "as the Council should approve as worthy of the position"; thus, in effect, allowing no appeal against its decision.

# Enquiries Answered.

*The services of a large staff of experts are at the disposal of readers who require information on architectural, constructional or legal matters. Questions should in all cases be addressed to the Editor. The querist's name and address must always be given, not necessarily for publication.*

### Fees for Designs not carried out.

GLASGOW.—A YOUNG ARCHITECT writes: "A client gave me instructions to prepare designs for a two-storey double villa, which I did. He now informs me that he is not going to build, and offers £1 for my work. Are there any special fees in cases like this; and am I not entitled to a larger fee?"

The Royal Institute of British Architects' schedule states that the commission for designs not executed, exactly equivalent in all respects to the work you have done, shall be 2½ per cent. on the estimated cost if over £1,000, but if less than this sum the percentage is not remunerative, and more should be charged. If tenders were secured from builders you are entitled to an additional half per cent. See the editorial note on p. 219 of this issue.

### Gas Engines for Wood-Working Machines.

GLASGOW.—J. B. writes: "I have a gas engine of 19-i.h.p. driving a shaft which works two-thirds of my wood-working machinery, while another engine of 11-i.h.p. drives another shaft working the remaining third. Both engines run at 200 revolutions, and the shafts (which are parallel and 9ft. apart) at 320 revolutions. The power given out by the small engine is not sufficient to drive the machinery connected to its shaft, and I wish to connect the two shafts by a belt so as to get additional power from the other engine, which can spare it. Can I do this without detriment to either engine? As it is not practically possible to govern each engine to exactly the same number of revolutions, will the slower engine not constitute a drag on the faster engine? As the two shafts are running in different directions the belt will be a cross one."

In running two gas engines together so as to be really effective their *piston* speeds should be the same, but yours appear to vary considerably, as the revolutions on both your large and small engine are alike, namely, 200 revolutions per minute. In the circumstances, if your gas engines are both modern, you should be able to govern them so that they would not vary in revolutions, say, more than 2 per cent. Of course, if one were slower than the other it would in a measure act as a brake. To secure economy in working, both engines should run at their full speed and with a full average working load, and it is important that the sizes of the pulleys on both engines and driven shafts are so proportioned that they give exactly 320 revolutions each on their respective shafts. As regards joining your two driving shafts, 9ft. centres are too short—15ft. would be better; crossed belts are also objectionable on the score of wear. In coupling up your present shafts—if you do not mind some "belt slip," and wish to drive your shafts in their present position—you might fit pulleys of a good diameter and width suitable for a wide belt. You will find a good deal of information in my recently published book on "Gas and Oil Engine Management." M. POWIS BALE.

### Stamping Agreements.

BIRMINGHAM.—J. J. H. writes: "In the last article on 'Builders' Office-work' published in your columns the author says that 'signatures may be written over a 6d. stamp, or the document may at any time within thirty days,' &c. Is not this an oversight? The Legal Pocket-Book says, 'Agreements under hand must be stamped within fourteen days.'"

The statement referred to was made without reference to any authority, the time limit mentioned being engraved on my memory as the result of a little "experience" with Somerset House. On receipt of your query references were hunted up. One authority gave fourteen days, another thirty days, whilst a third said the period varied according to the class of document. In order to get a definite pronouncement an appeal was made to the Commissioners of Inland Revenue, with the result that the version given by the third "authority" consulted proves to be the correct one. The secretary writes: "In the case of agreements under hand chargeable with the duty of 6d., I am directed by the Board of Inland Revenue to state that in order to be stamped free of penalty they must be presented for that purpose within fourteen days after the date of first execution." You are therefore correct in your contention. I apologize for having inadvertently caused the publication of an error by jumping to the conclusion that the one time limit applied to all classes of documents. W. H. C. E.

### Stock-taking.

BANBURY.—SANITAS writes: "Which is the most approved method of taking the stock of a builder and general builders' merchant? Owing to the length of time occupied and the constant variations in the stock, great difficulty is usually experienced."

No hard-and-fast rules can be laid down, because every business would necessitate the improvising of some special arrangements according to its internal economy. But, speaking generally, a little *method* in the work will prevent any serious trouble; and if the business is, for the purpose, divided into a certain number of "departments," and each department is tackled seriatim, the taking of the stock of each need not be a long job. Make a note of the date upon which it was taken, and let the figures stand; then, according to whether the stock was taken before or after the close of the financial year, deduct from or add to the stock-taking totals the correcting figures obtained either from an analysis of the "stores issued" books (if kept) or of a special register devised to suit the occasion. Enter the correcting totals as plus (+) or minus (−), as the case may be, with red ink in the margin of the stock-taking book, and then alter the original figure, also in red. A little foresight in arranging that each job shall as far as possible have its prospective wants supplied a day or two in advance of stock-taking, so that during its progress there shall not be a constant dribble of stores outwards, will ensure the easy working of the system; but with a general builders' merchant's business it will not be possible to do this, and the matter will be best met by making the departments comparatively small. Much worry may be saved by devoting what would otherwise be holiday-time to getting the most troublesome departments finished free from interruptions. W. H. C. E.

### Weights of Wire.

WORCESTER PARK.—W. C. writes: "Is there any table published giving the approximate number of feet to the lb. or cwt. in the various gauges of galvanized and copper wire? I have looked at various price-books and catalogues, but have failed to find such a table."

We do not know of any book giving such particulars. You can obtain rough weights by calculating the cubic dimensions of any length of wire and multiplying by the specific gravity of the metal, but the most satisfactory way is to measure off a quantity for yourself and weigh it.

### Valuations.

DUMBARTON.—NORTHERN writes: "Which is the best book for guidance when acting as valuator for house property?"

"Valuations and Compensations," by Prof. Banister Fletcher, price 6s. 6d.

### Electric Lighting and Wiring.

GLASGOW.—C. E. M. writes: "Please recommend an elementary text-book for electric lighting and wiring suitable for junior assistants."

"Electric Wiring, Fittings, Switches and Lamps," by W. Perren Maycock, 6s.

### Timbers Built in Wall.

SOUTHSEA.—L. A. C. writes: "(1) How can I avoid building in any wood less than 15in. away from the upper side of any hearth without using metal lathing? There is a by-law in this district which says that 'any person who shall erect a new building shall not place any timber or woodwork under any chimney opening of such building within 15in. from the upper surface of the hearth thereof.' (2) Kindly name a good and fairly inexpensive work on highway surveying."

(1) The by-law is very ambiguous, but what is meant is evidently that no woodwork shall be within 15in. of the back-hearth of any fireplace, *i.e.*, the portion of the hearth in the chimney opening under the grate. This stipulation does not prevent the front hearth being supported on a trimmer arch bearing against a wooden trimmer and the floor-boards running up close against the hearth, nor from the front edge of the front-hearth resting on the trimmer. Hearths are often supported now on iron bars filled in with concrete, and this method certainly avoids the sinking of hearths due to the trimmer arch spreading. (2) "Construction of Roads and Streets," by William A. Maxwell, A.M.I.C.E., price 3s. 6d.

# Law Cases.

**Claim for Extras: A Scotch Case.**—In the Sheriff Court at Glasgow, Sheriff Guthrie recently delivered judgment in an appeal case brought by Messrs. W. Shaw & Son, contractors, against Messrs. Ferguson & Forrester, Ltd. The plaintiffs contracted to carry out extensive alterations upon the underground portion of the defendants' premises in Buchanan Street, Glasgow, for the sum of £474. Mr. George Bell, architect, was left by the defendants to supervise the work and to order alterations from time to time. The plaintiffs encountered unlooked-for difficulties with the foundations, and also with the building itself, so that altogether the alterations cost £7,821, and it was the balance unpaid upon the building contract for which the plaintiffs sued. Sheriff Balfour had decided in their favour, holding that though the work executed was not at all included in the estimate it largely consisted of extras ordered either by the defendants or by Mr. Bell, the architect. Sheriff Guthrie, on appeal, adhered to the interlocutor of the Sheriff-Substitute, and in a note his Lordship said the evidence made it abundantly clear that the defendants left the whole operations under the control and power of Mr. Bell, and it was equally clear that he ordered and had priced after measurement the whole of the work done under contract, including extras and deviations. It was certain that the defendants' directors knew that deviations were taking place, and it was equally certain that both in accepting the contract at first and in every stage of the work these directors entered into no direct communication with the plaintiffs beyond occasional conversation and consultation, and that the whole superintendence, direction and control of the work was left by them to Mr. Bell. It might not perhaps be wise in all cases for owners of property to put themselves entirely into the hands of their architect, but if they did so they had themselves to blame; and if the architect had exceeded his powers in dealing with contractors who had been allowed, as in this case, to suppose that his powers were unlimited, their remedy was against him and not against the innocent contractor.

## Keystones.

**Houses of Famous Men.**—The London County Council have decided to fix memorial tablets on the following houses:—(1) 56, Devonshire Street, Portland Place (Sir John Herschel); (2) 1, Devonshire Terrace, Portland Place (Charles Dickens); and (3) 12, Clarges Street, Piccadilly (Edmund Kean).

**Our Competition for Drawings of Detail on Modern Buildings.**—The matter having been represented to us, we have reconsidered our decision with regard to the wash drawings submitted in this competition, and have agreed to award to Mr. Gillespie, of Edinburgh, the prize of two guineas offered. We do this in order to remove any feeling of unfairness which might exist, and not because we consider the drawing to be fully worthy of the prize. As already stated, the wash drawings submitted were very meagre in number and, with the exception of Mr. Gillespie's, inferior examples of work: so that we felt justified at the time in not awarding the prize.

**Leeds and Yorkshire Architectural Society.**—At the opening meeting of the session held on Thursday last, Mr. Butler Wilson delivered his presidential address, in the course of which he referred to the improvement of the City Square, Leeds. He said that Mr. Brock s statue of the Black Prince had a power and distinction which made the city fortunate in possessing it. The subsidiary features, by Mr. Drury, Mr. Pomeroy and Mr. Fehr, were also fine examples of the sculptor's art, but, taking the treatment of the square in its entirety, he was inclined to think that it was neither kind nor fair to the surrounding figures, however beautiful in themselves, to place them at such obvious disadvantage as their proximity to the principal feature entailed. Nor could it be pleaded that the equestrian statue was in need of their assistance.

**Excavations in the Roman Forum.**—The great discovery of the year has been that of a large base of concrete which must at one time have supported a colossal monument (in all probability an equestrian statue of Domitian) occupying a central position in the area of the Forum. The base measures about 40ft. by 20ft., and in its lower portion some of the beams and planks used in setting the concrete are still embedded. It blocks one of the subterranean galleries which Comm. Boni believes to have been constructed by Julius Cæsar in connection with gladiatorial shows. Another discovery of importance is that of the base and some fragments of the Ara Pacis Augustæ, which incorporated more fully than any other monument the spirit of the Golden Age. It commemorated the return of Augustus from the western provinces in 13 B.C. and the completion of his proudest achievement—the establishment of the Pax Romana throughout the empire.

**An Acton Competition.**—In response to invitations, Messrs. Maurice B. Adams, Felix Clay, Giles, Gough & Trollope, Pratt, W. Pywell, Osborne Smith and A. H. Tiltman submitted designs for a new county school for Middlesex to be erected at Acton. Mr. Leonard Stokes, the assessor, has awarded the first and second premiums to Mr. W. Pywell and Messrs. Giles, Gough & Trollope respectively.

**The Surveyors' Institution** held a meeting on Monday evening, when Mr. Herbert T. Scoble read a paper on "Industrial Decentralization, an important factor in the Solution of the Housing Problem." He thought the establishment of factories in the country would do more to solve the housing problem than the erection of tenement buildings in, or dormitory towns near, our industrial centres, or the provision of transit facilities which must inevitably lead to greater congestion.

**The Glasgow Technical College Architectural Craftsmen's Society** held a meeting last Friday evening (Mr. C. Ernest Monro, F.R.I.B.A., president, being in the chair), when Mr. James C. Walker read a paper on "The Planning and Construction of Burgh Buildings." On Saturday afternoon the members visited the new King's Theatre, Bath Street, Glasgow, of which Mr. Frank Matcham is the architect, and were shown over the buildings, now rapidly approaching completion, by Mr. A. E. Marsh, the clerk of works in charge.

**Ayr Hospital Competition.**—Mr. A. Cullen, F.R.I.B.A., of Hamilton, the assessor in the competition for designs for the infectious diseases hospital to be erected at Clovehill, near Ayr, for the Ayrshire County Council, at a cost of about £7,000, has awarded the first place to Mr. W. C. Laidlaw, of Edinburgh, who has been appointed architect for the hospital according to the conditions at 5 per cent. commission. The second premium of £21 goes to Messrs. Newton & Cheatle, of Birmingham; and the third premium of £10 10s. to Mr. J. Kennedy Hunter, of Ayr.

**The Quantity Surveyors' Association** held a meeting last Wednesday for the purpose of approving the memorandum and articles of association, and of electing office-bearers. Mr. W. Hoffman Wood, F.S.I., of Leeds, was in the chair. Mr. F. B. Hollis, hon. secretary and treasurer *pro tem*, read correspondence showing that the Surveyors' Institution objected to the multiplying of associations for members of the same profession by creating separate organizations for each branch, and especially the setting up of competing systems of examination. The chairman announced that 150 members of the profession had promised to join the Association. It was agreed that the title of the society should be as stated above, and membership was limited to "qualified quantity surveyors," thus allowing architects to become members if qualified. Mr. Walter Lawrance was elected president, Messrs. A. J. Gate and W. Hoffman Wood vice-presidents, Mr. F. B. Hollis hon. secretary and treasurer, Messrs. H. J. West and John Nixon hon. auditors, and Messrs. H. L. Beckwith, Curtis Card, H. Crickmay, A. G. Cross, R. L. Curtis, junr., H. England, W. R. Hood and R. J. Tollit members of the Committee.

## Current Market Prices.

| | | £ | s. | d. | £ | s. | d |
|---|---|---|---|---|---|---|---|
| **METALS.** | | | | | | | |
| Copper, sheet, strong | per ton | 71 | 0 | 0 | | | |
| Iron, Staffs., bar | do. | 6 | 5 | 0 | 8 | 10 | 0 |
| Do. Galvanised Corrugated sheet | do. | 10 | 15 | 0 | 11 | 0 | 0 |
| Lead, pig, Soft Foreign | do. | 11 | 1 | 3 | | – | |
| Do. do. English common brands | do. | 11 | 7 | 6 | | — | |
| Do. sheet English 3lb. per sq. ft and upwards | do. | 14 | 0 | 0 | | — | |
| Do. pipe | do. | 15 | 0 | 0 | | — | |
| Nails, cut clasp, 3in. to 6in. | do. | 9 | 5 | 0 | | — | |
| Do. floor brads | do. | 9 | 0 | 0 | | — | |
| Steel, Staffs., Girders and Angles | do. | 5 | 0 | 0 | 6 | 5 | 0 |
| Do. do. Mild bars | do. | 6 | 0 | 0 | 6 | 5 | 0 |
| Tin, Foreign | do. | 116 | 12 | 6 | 117 | 2 | 6 |
| Do. English ingots | do. | 119 | 10 | 0 | 121 | 10 | 0 |
| Zinc, sheets, Silesian | do. | 23 | 2 | 6 | | — | |
| Do. do. Vielle Montaigne | do. | 23 | 10 | 0 | | – | |
| Do. Spelter | do. | 20 | 12 | 6 | 20 | 17 | 6 |
| **TIMBER.** | | | | | | | |
| **SOFT WOODS.** | | | | | | | |
| Fir, Dantzic and Memel | per load | 1 | 13 | 0 | 3 | 0 | 0 |
| Pine, Quebec, Yellow | do. | 5 | 5 | 0 | 6 | 5 | 0 |
| Do. Pitch | do. | 2 | 12 | 0 | 3 | 3 | 0 |
| Laths, log, Dantzic | per fath. | 4 | 10 | 0 | 5 | 10 | 0 |
| Do. St. Petersburg | do. | 7 | 5 | 0 | | | |
| Deals, Wolf River Spruce, 1st, 2nd and 3rd, 3×9 | do. | 8 | 0 | 0 | 8 | 15 | 0 |
| Do. Nederkalix, Yellow, 2nd, 4×11 | do. | 11 | 0 | 0 | 15 | 0 | 0 |
| Do. do. do. do. 4×9 | do. | 11 | 15 | 0 | | — | |
| Do. Abo, Yell., Unsorted, 3×8 | do. | 10 | 0 | 0 | | — | |
| Do. Lulea. do. 2nd, 3×9 | do. | 8 | 15 | 0 | | — | |
| Do. Riga, White, Unsorted, 3×11 | do. | 8 | 15 | 0 | | — | |
| Do. do. do. do. 3×12 | do. | 8 | 0 | 0 | | — | |
| Do. do. do. do. 3×13 | do. | 8 | 5 | 0 | | — | |
| Do. do. do. 2nd & 3rd, 3×9 | do. | 8 | 5 | 0 | | — | |
| Do. Onega, White, 2nd, 3×9 | do. | 9 | 10 | 0 | 9 | 15 | 0 |
| Do. Gefle, Yellow, 1st, 3×11 | do. | 18 | 5 | 0 | | — | |
| Do. do. do. 2nd, 4×11 | do. | 14 | 15 | 0 | | - | |
| Do. Petschora, Yellow, 2nd, 3×9 | do. | 15 | 15 | 0 | | — | |
| Do. do. do. 3rd, 3×11 | do. | 11 | 15 | 0 | | — | |
| Do. do do. 4th, do. | do. | 9 | 0 | 0 | | — | |
| Do do. do. Unsorted, 3×7 | do. | 10 | 0 | 0 | | | |
| Do. Rio Prime Pitch Pine, 3×9 | do. | 9 | 10 | 0 | | — | |
| Do. Sundsvall, Yellow, Unsorted, 4×9 | do. | 7 | 0 | 0 | | — | |
| Do. do. do. do. 5×8 | do. | 6 | 12 | 6 | | - | |
| Do. Sandarne, Dry White, 1st & 2dd, 3×11 | do. | 9 | 0 | 0 | | — | |
| Do Archangel, Yellow, 1st, 2nd, 3rd & 4th, 3×11 | do. | 9 | 10 | 0 | | — | |
| Do. do. do. do. 3×9 | do. | 11 | 0 | 0 | | — | |
| Do. do. do. do. 3×8 | do. | 9 | 5 | 0 | | — | |
| Do. do. do. 3rd, 3×11 | do. | 12 | 10 | 0 | | — | |
| Do. do. do. Unsorted, 3×7 | do. | 8 | 0 | 0 | | — | |
| Do. do. White, 1st, 3×11 | do | 14 | 5 | 0 | | — | |
| Do. do. do. 2nd, do. | do. | 11 | 10 | 0 | | — | |
| Do. do. do. 5th, 3×9 | do. | 5 | 12 | 6 | | — | |
| Do. St. Petersburg, Yell., 1st, 3×11 | do. | 11 | 10 | 0 | | — | |
| Do. do. do. do. 3×9 | do. | 12 | 5 | 0 | | – | |
| Do. do. do. 3rd, 3×11 | do. | 7 | 10 | 0 | 8 | 0 | 0 |
| Do. do. do. do. 3×9 | do | 8 | 5 | 0 | | — | |
| Do. do. White, 3rd, 3×9 to 3×11 | do. | 8 | 0 | 0 | | — | |
| Do. do. do. do. 3×7 | do. | 7 | 10 | 0 | 8 | 0 | 0 |
| Do. Oserko, Yellow, 5th, 4×9 | do. | 8 | 15 | 0 | | — | |
| Do. do. do. do. 3×11 | do. | 9 | 5 | 0 | | - | |
| Do. do. do. do. 3×9 | do. | 9 | 0 | 0 | | - | |
| Do. do. do. 4th, 4×6 | do. | 12 | 0 | 0 | | — | |
| Do. Galatz, White, 1st, 3×11 | do. | 8 | 5 | 0 | | — | |
| Do. do. do do. 3×9 | do. | 8 | 15 | 0 | | — | |
| Do. Batsican, Spruce, 1st, 3×11 | do. | 10 | 0 | 0 | | — | |
| Do. do. do. 3rd, 3×9 | do. | 8 | 15 | 0 | 9 | 15 | 0 |
| Do. Saguenay, Yell. Pine, 3rd, 3×9 to 3×14 | do. | 10 | 10 | 0 | | — | |
| Do. do. do. 4th 3×7 to 3×20 | do. | 6 | 15 | 0 | | — | |
| Do. do. Bright Spruce, Unsorted, 3×7 to 3×12 | do. | 7 | 10 | 0 | | — | |
| Do. Soderhamn, Yellow, 3rd. 3×8 | do. | 12 | 0 | 0 | | - | |
| Do. Pernoviken, do. 1st & 2nd. do. | do. | 9 | 10 | 0 | | — | |
| Do. Norrkoping, White, Unsorted, 3×11 | do. | 8 | 0 | 0 | | — | |
| Do. do. do. do. 3×9 | do. | 8 | 0 | 0 | | — | |
| Do. do. Yellow do. 3×10 to 3×11 | do. | 8 | 15 | 0 | | — | |
| Do. White Sea do. 2nd, 3×11 | do | 16 | 10 | 0 | | — | |
| Do. do. do. do. 3×9 | do. | 15 | 10 | 0 | | — | |
| Do. do. do. 3rd, do. | do. | 12 | 15 | 0 | | — | |
| Do. Quebec. Red Pine, 3rd, 3×11 | do. | 7 | 15 | 0 | | — | |
| Do. do. Yell. do. do. | do. | 12 | 15 | 0 | | — | |
| Do. do. Bright Spruce, 1st, 3×9 | do. | 11 | 5 | 0 | | — | |
| Do. do. do. do. 3×[illegible] | do. | 11 | 10 | 0 | | — | |
| Do. Montreal Yell. Pine, 4th do. | do. | 9 | 0 | 0 | 10 | 5 | 0 |
| Do Bathurst, Spruce, 1st, 2nd & 3rd, 3×7 | do. | 7 | 10 | 0 | | — | |

TENDERS—*cont. from* p. xii.

**St. Cleer (Cornwall).**—For the restoration of St. Cleer Church. Mr. G. H. Fellowes Prynne, architect, 6, Queen Anne's Gate, Westminster. Quantities by Mr. R.; Henry Hale, F.S.I., 33, Old Queen Street, Westminster, S.W.:—

| | | | |
|---|---|---|---|
| Dart & Framers .. .. .. .. .. | £1,345 | 0 | 0 |
| G. Miners .. .. .. .. .. .. | 1,239 | 19 | 3 |
| N. W. Wiffen .. .. .. .. .. | 1,170 | 17 | 6 |
| G. B. Andrews .. .. .. .. .. | 1,133 | 17 | 1 |
| J. C. Lang .. .. .. .. .. .. | 1,121 | 16 | 4 |
| S. Treherne, Liskeard* .. .. .. | 1,008 | 5 | 0 |

* Accepted.

**Woodford (Essex).**—For the construction of the several works included in the following contracts, for the Urban District Council:—(Contract No. 1) 319 lin. yds. 24in. Hassall's pipe sewer, 1,085 lin. yds. 18in. same, 48 lin. ft. 18in. steel tube, 84 lin. yds. 18in. cast-iron pipes, 470 lin. yds. 18in storm-water sewer, 494 lin. yds. 15in. storm-water sewer, 790 lin. yds. 12in. storm-water sewer, 44 lin. yds. 9in. storm-water sewer, together with manholes, &c. (2) Construction of two 18in. concrete tanks, each 576ft. by 100ft. and 4ft. deep in the clear, together with the supplying and fixing of the necessary appliances for automatically filling and emptying. Leading and filling the tanks with clinkers provided by Council adjacent to site. Alterations and additions to existing septic tanks. One storm-water filter, 180ft. by 100ft., and 4ft. deep in the clear. Two top-water filters, each 54ft. by 40ft., and 3ft. 6in. deep in the clear. One sludge lagoon, 58ft. by 40ft., and average 5ft. deep. Mr. William Farrington, A.M.I.C.E., surveyor to the Council. Mr. William Spinks, M.I.C.E., engineer, 20, Park Row, Leeds:—

Contract No. 1.

| | | | |
|---|---|---|---|
| M. S. Kitteringham, Waltham Cross .. .. .. .. .. .. | £11,693 | 0 | 0 |
| E. Roger & Co., North Kensington | 10,754 | 0 | 0 |
| C. W. Killingback & Co., Camden Town .. .. .. .. .. .. .. | 10,126 | 5 | 7 |
| W. & C. French, Buckhurst Hill . | 10,026 | 14 | 7 |
| J. S. Dawson, Buxton .. .. .. | 9,953 | 15 | 6 |
| T. Adams, Wood Green, N. .. .. | 9,544 | 9 | 0 |
| Arnold & Sons, Doncaster .. .. | 9,440 | 0 | 0 |
| J. Jackson, Forest Gate .. .. .. | 9,289 | 10 | 6 |
| J. & T. Binns, Croydon .. .. .. | 9,223 | 0 | 3 |
| J. Jackson, Plaistow .. .. .. .. | 9,086 | 5 | 0 |
| G J. Anderson, Poplar, E. .. .. | 8,952 | 10 | 1 |
| B. Cooke & Co, Westminster .. | 8,934 | 0 | 0 |
| Coxhead & Co., Leytonstone, E. .. | 8,685 | 0 | 0 |
| G. Bell, Tottenham .. .. .. .. | £8,653 | 0 | 0 |
| Johnson & Langley Leicester .. | 8,553 | 9 | 0 |
| G. Freeman & Son, Oldham . .. | 8,545 | 13 | 1 |
| W. Moss & Sons, Loughborough .. | 8,408 | 14 | 2 |
| W. Manders, Leyton, E. .. .. .. | 8,247 | 0 | 0 |
| G. Hodgson & Sons, Nottingham* | 8,042 | 1 | 0 |

Contract No. 2.

| | | | |
|---|---|---|---|
| J. Jackson, Plaistow .. .. .. .. | 20,713 | 2 | 9 |
| M. S. Kitteringham .. .. .. .. | 19,668 | 17 | 4 |
| C. W. Killingback & Co .. .. .. | 18,798 | 10 | 6 |
| E. Roger & Co. .. .. .. .. .. | 18,713 | 0 | 0 |
| T. Adams .. .. .. .. .. .. | 18,498 | 1 | 11 |
| Arnold & Sons .. .. .. .. .. | 16,648 | 0 | 0 |
| J. & T. Binns .. .. .. .. .. | 16,568 | 13 | 7 |
| B. Cooke & Co. .. .. .. .. .. | 16,560 | 0 | 0 |
| Johnson & Langley .. .. .. .. | 15,889 | 13 | 6 |
| W. & C. French .. .. .. .. .. | 15,814 | 16 | 10 |
| J. S. Dawson .. .. .. .. .. | 15,697 | 6 | 6 |
| G. Hodson & Sons .. .. .. | 15,510 | 19 | 4 |
| Coxhead & Co .. .. .. .. .. | 14,142 | 0 | 0 |
| G. Bell .. .. .. .. .. .. .. | 14,010 | 0 | 0 |
| W. Manders .. .. .. .. .. .. | 13,989 | 0 | 0 |
| G. Freeman & Son .. .. .. .. | 13,776 | 1 | 2 |
| G. J. Anderson .. .. .. .. .. | 13,545 | 6 | 2 |
| W. Moss & Sons* .. .. .. .. | 13,065 | 9 | 5 |

* Accepted.

# Complete List of Contracts Open.

| DATE OF DELIVERY. | WORK TO BE EXECUTED. | FOR WHOM. | FROM WHOM FORMS OF TENDERS MAY BE OBTAINED. |
|---|---|---|---|
| | **BUILDING:** | | |
| Nov. 26 | Eastbourne—Fire Station .. .. .. .. .. .. | Corporation .. .. .. .. | Borough Surveyor, Town Hall, Eastbourne. |
| ,, 26 | Evesham - Sulphate Plant Building .. .. .. .. | Town Council .. .. .. | P. H. Fletcher, Engineer, Gas Works, Evesham. |
| ,, 26 | Cardiff—Jobbing Works .. .. .. .. .. .. | Corporation .. .. .. .. | C. H. Priestley, Waterworks Engineer, Town Hall, Cardiff. |
| ,, 26 | Greenock—Cement .. .. .. .. .. .. .. | Harbour Trustees .. .. | Engineer, Municipal Buildings, Greenock. |
| ,, 26 | Merthyr—Rebuilding Premises .. .. .. .. .. | —— | C. M. Davies, 112 High Street, Merthyr. |
| ,, 26 | Merthyr Tydfil—School .. .. .. .. .. .. | School Board .. .. .. | E. Stephens, Clerk, Town Hall, Merthyr Tydfil. |
| ,, 26 | Pengam, Wales—Two Business Premises .. .. .. | —— | Mr. Davies, Coal Hole Inn, Gellehaf, Maesycymmer. |
| ,, 27 | Lichfield—Taking Down Houses, &c. .. .. .. .. | Sanitary Committee .. .. | E. Brooke, City Surveyor, Stowe Street Depôt, Lichfield. |
| ,, 27 | Warrington—Cement and Bricks .. .. .. .. .. | Cheshire Lines Committee .. | Thomas Clegge, Cheshire Line Stores Department, Warrington. |
| ,, 27 | Waltham Abbey, Essex—Public Building .. .. .. | Urban District Council .. .. | W. T. Strenther, Council's Surv., Highbridge St. Waltham Abbey. |
| ,, 27 | Kilmarnock—Generating Station .. .. .. .. | Electric Committee .. .. | R. Blackwood, Burgh Surveyor, Market Bridge, Kilmarnock. |
| ,, 27 | Nottingham—Plant House .. .. .. .. .. .. | Guardians .. .. .. .. | G. M. Howard, Clerk, Poor Law Offices, Nottingham. |
| ,, 28 | Dodworth, Yorks—Brick Culvert .. .. .. .. .. | Urban District Council .. .. | G Strutt, Council's Surveyor, High Street, Dodworth. |
| ,, 28 | Knaresborough—Purifier House, &c. .. .. .. .. | Urban District Council .. .. | J. E. Walker, Surveyor, Town Hall, Knaresborough. |
| ,, 28 | Merthyr Vale—Hotel and Thirty-one Cottages .. .. .. | —— | T. Roderick, Architect, Glebe Land, Merthyr Tydfil. |
| ,, 28 | Felling, Durham—Cement Bricks, &c. .. .. .. .. | Urban District Council .. .. | Surveyor, Council Buildings, Felling, R.S.O. |
| ,, 28 | Eastbourne—Public Baths .. .. .. .. .. .. | Corporation .. .. .. .. | Borough Building Surveyor, Town Hall, Eastbourne. |
| ,, 28 | Kelbrook, near Colne—Farm Buildings .. .. .. .. | —— | J. Robertshaw & Son, 55 Tyrrel Street, Bradford. |
| ,, 30 | Bradford—School House .. .. .. .. .. .. | School Board .. .. .. | Board's Architect, Manor Row, Bradford |
| ,, 30 | Bradford—Repairs to Roof of Car Sheds .. .. .. .. | Corporation .. .. .. .. | F. E. P. Edwards, City Architect, Whitaker Buildings, Brewery Street, Bradford. |
| ,, 30 | Felixstowe—Three Public Conveniences .. .. .. .. | Urban District Council .. .. | Surveyor, Town Hall, Felixstowe. |
| ,, 30 | Batley—Destructor Buildings .. .. .. .. .. | Town Council .. .. .. | Borough Surveyor, Branch Road, Batley. |
| ,, 30 | Carnarvon—Gymnasium .. .. .. .. .. .. | Local Governing Body .. .. | R. Ll. Jones, 14 Market Street, Carnarvon. |
| ,, 30 | Halifax—Alterations to Premises .. .. .. .. .. | Royal Insurance Co. .. .. | T. Kershaw, Architect, Lancs and York Bank Chambers, Halifax. |
| ,, 30 | Ipswich—Hospital .. .. .. .. .. .. .. | —— | J. S. Corder, Architect, Wimborne House, Ipswich. |
| ,, 30 | Dublin—Cements, Bricks, Tiles, &c. .. .. .. .. | Midland Great Westean Railway Co. of Ireland. | R. L. Batham, Secretary, Broadstone Station, Dublin. |
| ,, 30 | Radcliffe, Northumberland—Butcher's Premises and House .. | Co-operative Society, Ltd. .. | J. G. Crone, 26 Clothmarket, Newcastle-upon-Tyne. |
| ,, 30 | Greenwich—Mortuary, &c. .. .. .. .. .. .. | Borough Council .. .. | A. Roberts, 18 Nelson Street, Greenwich, S.E. |
| ,, 30 | King's Norton—Waiting-Room and Car Shed .. .. .. | Urban District Council .. .. | A. W. Cross, 25 Valentine Road, King's Heath, nr. Birmingham. |
| ,, 30 | Swanage—Retaining Wall .. .. .. .. .. .. | Urban District Council .. .. | T. Randall, Clerk, Town Hall, Swanage. |
| ,, 30 | Ipswich—Hospital .. .. .. .. .. .. .. | —— | J. S. Corder, Architect, Wimbourne House, Ipswich, Suffolk. |
| Dec 1 | Moville, Ireland—Lodge, &c. .. .. .. .. .. | —— | R. H. Nolan & Co., Carlisle Road, Londonderry. |
| ,, 1 | Heworth, Durham—Alterations, to Dwelling-House .. .. | Felling Education Committee .. | H. Miller, Architect, Council Buildings, Felling, Durham. |
| ,, 1 | Anstruther, Fife, Scotland—Lifeboat House. &c. .. .. | Royal Natnl. Lifeboat Institution | W. T. Douglass, 15 Victoria Street, London, S.W. |
| ,, 1 | Brighton—Renewing Sanitary Appliances, &c. .. .. | Guardians .. .. .. .. | H. S. Reed, Parochial Offices, Princes Street, Brighton. |
| ,, 1 | Ebbw Vale, Mon.—Waiting Room, &c. .. .. .. .. | Great Western Railway Co. .. | Engineer, Newport Station, Mon, |
| ,, 1 | Sheffield—Maternity Hospital .. .. .. .. .. | Ecclesall Bierlow Guardians .. | J. R. Wigfull, 14 Parade Chambers, East Parade, Sheffield. |
| ,, 1 | Plymouth—Warehouses .. .. .. .. .. .. | Great Western Railway Co. .. | Engineer, North Road Station, Plymouth. |
| ,, 2 | Hammersmith—Library .. .. .. .. .. .. | —— | H. T. Hare, Architect, 13 Hart Street, Bloomsbury, W.C. |
| ,, 2 | Evenwood, near Bishop Auckland—Branch Store .. .. | Industrial Co-op. Flour & Provision Soc., Ltd. | F. H. Livesay, Architect, Bishop Auckland. |
| ,, 3 | Cymmer, Porth, Wales—Librarian's House .. .. .. | —— | W. Thomas, Secretary, Library, Cymmer, Porth. |
| ,, 3 | London, E.—Library .. .. .. .. .. .. .. | Poplar Borough Council .. .. | C. H. Norton, 14 Bedford Row, W.C. |
| ,, 3 | Chatham—Bricks .. .. .. .. .. .. .. | Corporation .. .. .. .. | C. Day, Borough Surveyor, Town Hall, Chatham. |
| ,, 4 | Birkdale, Lancs—Hospital .. .. .. .. .. .. | Urban District Council .. .. | J. F. Keeley, Clerk, Town Hall, Birkdale. |
| ,, 5 | Worcester—Additions to School .. .. .. .. .. | Education Committee .. .. | H. Rowe, City Architect, Pierpont Street, Worcester. |
| ,, 9 | Haltwhistle, Northumberland—Boardroom, &c. .. .. | Guardians .. .. .. .. | J. M. Clark, Surveyor, Haltwhistle, Northumberland. |
| ,, 11 | Gallows Plain, near Hertford—Alterations, &c., to Hospital .. | Joint Hospital Board .. . | G. H. Gisby, Clerk, Ware, Herts. |
| ,, 12 | Murroe, Limerick—Church .. .. .. .. .. .. | Very Rev. J. J. Duan .. .. | J. O'Malley, Architect, Glenworth Street, Limerick. |
| ,, 14 | Birmingham—Superstructure, Internal Finishings, &c., of University Buildings. | —— | A. Webb & E. J. Bell, 19 Queen Anne's Gate, London, S.W. |
| ,, 16 | Clutton, near Bristol—Alterations, &c., to Workhouse .. | Guardians .. .. .. .. | W. F. Bird, Architect, Midsomer Norton. |
| | **ENGINEERING:** | | |
| Nov. 28 | Toronto, nr. Bishop Auckland—Heating Church .. .. | —— | Hicks & Charlewood, Archts., 67 Westgate Rd, Newcastle on-Tyne. |
| ,, 30 | Wheatley Hill, Durham—Driving Stone Drift .. .. .. | Weardale Steel & Coke Co., Ltd. | Manager, Wheatley Hill Colliery Office, Durham. |
| ,, 30 | Dublin—Electrical Supplies .. .. .. .. .. .. | Dublin Uunited Tramways Co. . | R. S. Tresilian, Secretary, 9 Upper Sackville Street. Dublin. |
| ,, 30 | Brandon, Suffolk—Waterworks .. .. .. .. .. | Rural District Council .. .. | H. Walker & Son, Civil Engineers, Albion Chambers, King Street, Nottingham. |
| ,, 30 | Palencia, Spain—Waterworks .. .. .. .. .. | —— | Commercial Intelligence Branch, Board of Trade, 50 Parliament Street, S.W. |
| ,, 30 | London, N.—Electrical Meters, &c. .. .. .. .. | Urban District Council .. .. | N. Staniland, Resident Electrical Engineer, Electricity Works, Tottenham Lane, Hornsey. |
| ,, 31 | Sowerby Bridge, Yorks—Trade Effluent Purification Works | Asquith Bottom Dyeworks .. | Spinks & Pilling, 20 Park Row, Leeds. |
| ,, 31 | Culiacan, Mexico—Electric Lighting .. .. .. .. | —— | Secretaria del Ayuntamiento, Culiacan. |
| Dec. 1 | Windsor—Public Lighting of Town .. .. .. .. | Town Council .. .. .. | Town Clerk, 3 Park Street, Windsor. |
| ,, 1 | Colombo, Ceylon—Electricity Supply .. .. .. .. | Ceylon Government .. .. | Commercial Intelligence Branch, Board of Trade, 50 Parliament Street, S.W. |
| ,, 1 | London, N.—Alterations to Hot-water Supply Apparatus .. | Metropolitan Asylums Board .. | T. D. Mann, Secretary, Board's Offices, Embankment, E.C. |
| ,, 3 | Chelmsford—Pipelaying .. .. .. .. .. .. | Rural District Council .. .. | J. Dewhirst, Engineer, Avenue Chambers, Chelmsford. |
| ,, 4 | Belfast—Heating and Ventilating Systems .. .. .. | Assembly Buildings Committee. | Young & Mackenzie, Architects, Scottish Amicable Buildings, Belfast. |
| ,, 5 | London, S.W.—Electric Wiring, &c. .. .. .. .. | London County Council .. .. | County Hall, Spring Gardens, S.W. |
| ,, 7 | Park Royal, near Acton—Electrical Plant .. .. .. | Great Western Railway Co. .. | Kennedy & Jenkin, 17 Victoria Street, Westminster, S.W. |
| ,, 7 | Brighton—Power Station Plant .. .. .. .. .. | Town Council .. .. .. | A. Wright, Star Chambers, 30 Moorgate Street, E.C. |
| ,, 8 | London, S.E.—Electric Generators, &c. .. .. .. .. | London County Council . | County Hall, Spring Gardens, S.W. |
| ,, 8 | Bishop's Stortford—Repairing Engines, &c. .. .. .. | Urban District Council .. .. | R. S. Scott, Surveyor, County Offices, North St., Bishop's Stortford. |
| ,, 15 | New York, U.S.A.—Tunnels .. .. .. .. .. | Pennsylvania, New Jersey & New York Railway Co. | Chief Engineer, 20 West Thirty-fourth Street, New York City, New York State, U.S.A. |
| ,, 15 | New York, U.S.A.—Tunnels under North River .. .. | Pennsylvania, New York & Long Island Railway Co. | Chief Engineer, 20 West Thirty-fourth Street, New York City, New York State, U.S.A. |
| ,, 15 | Inverary, Scotland—Pier Repairs .. .. .. .. .. | Town Council .. .. .. | R. S. Corrigall, Town Clerk, Inverary, Scotland. |
| ,, 15 | Strabane, Ireland—Gasworks .. .. .. .. .. | Urban District Council .. .. | C. Hunt, 15 Victoria Street, Westminster, S.W. |
| ,, 15 | New York, U.S.A.—Tunnels to Long Island .. .. .. | Pennsylvania, New York & Long Island Railway Co. | Chief Engineer, 20 West Thirty-fourth Street, New York City, New York State, U.S.A. |

# Complete List of Contracts Open —*continued*

| DATE OF DELIVERY. | WORK TO BE EXECUTED. | FOR WHOM. | FROM WHOM FORMS OF TENDERS MAY BE OBTAINED. |
|---|---|---|---|
| | **FURNITURE:** | | |
| Nov. 27 | Southampton—Desks for New Corn Market | Corporation | J. A. Crowther, Borough Engineer, Municipal Offices, Southampton. |
| „ 28 | Newport, Mon—Bedsteads, &c. | Guardians | J. Thomas, Clerk, Union Offices, Queen's Hill, Newport, Mon. |
| | **IRON AND STEEL:** | | |
| Nov. 26 | Cardiff—Stores | Corporation | C. H. Priestley, Waterworks Engineer, Town Hall, Cardiff. |
| „ 27 | Warrington—Railway Stores | Cheshire Lines Committee | S. S. Barton, Stores Superintendent, Cheshire Lines, Warrington. |
| „ 28 | Felling, Durham—Cast-iron Work, &c. | Urban District Council | Council Surveyor, Council Buildings, Felling, R.S.O., Durham. |
| „ 28 | Swansea—Iron and Steel | Harbour Trustees | Engineer, Harbour Office, Swansea. |
| „ 30 | Dublin—Stores | United Tramways Co. | R S. Tresilian, 9 Upper Sackville Street, Dublin. |
| „ 30 | Thornton, near Poulton-le-Fylde, Lancs—Pipes | Sewerage Committee | A. Hindle, 44 Abingdon Street, Blackpool. |
| „ 30 | Dublin—Railway Stores | Midland Great Western Rly. Co. of Ireland. | General Stores Department, Broadstone Station, Dublin. |
| „ 30 | Birkenhead—Girders | London & North-Western & Gt. Western Rly Co.'s Joint Com. | Joint Engineer, Woodside Station, Birkenhead. |
| „ 30 | Brandon, Suffolk—Pipes | Rural District Council | Walker & Son, Civil Engrs., Albion Chbrs., King St., Nottingham. |
| „ 30 | Clacton-on-Sea—Steel Roof, &c. | Urban District Council | S Francis, Engineer, Town Hall, Clacton-on-Sea. |
| „ 30 | Edinburgh—Pipes | Gas Commissioners | W. R. Herring, Chief Engineer, New Street Works, Edinburgh. |
| Dec. 3 | Chatham—Street Gratings and Covers | Corporation | C. Day, Borough Surveyor, Town Hall, Chatham. |
| „ 3 | Southend-on-Sea—Fencing | Corporation | E. J. Elford, Borough Surveyor, Southend-on-Sea. |
| „ 3 | Chelmsford—Pipes | Rural District Council | J Dewhirst, Engineer, Avenue Chambers, Chelmsford. |
| „ 4 | Aldershot—Tubes and Fittings | Gas & Water Co. | R. W. Edwards, Secretary, Aldershot. |
| „ 7 | South Hetton, Durham—Iron Castings, &c. | Coal Co., Ltd. | J. R. Lambert, South Hetton, Sunderland. |
| | **PAINTING AND PLUMBING:** | | |
| Nov. 26 | Cardiff—Plumbing | Corporation | C. H. Priestley, Waterworks Engineer, Town Hall, Cardiff. |
| „ 26 | Greenock—Paints | Harbour Trustees | Engineer, Municipal Buildings, Greenock. |
| „ 27 | Warrington—Oils, White Lead, Lead Sheet and Piping, &c. | Cheshire Lines Committee | S. S. Barton, Stores Superintendent, Cheshire Lines, Warrington. |
| „ 30 | Dublin—Varnish, Paints, Oil &c. | Midland Great Western Rly. Co of Ireland. | General Stores Department, Broadstone Station, Dublin. |
| „ 30 | Dublin—Paints, Oils, Glass, &c. | Dublin United Tramways Co | R. S. Tresilian, 9 Upper Sackville Street, Dublin. |
| Dec. 2 | Dublin—Paints and Oils | City of Dublin Steam Packet Co. | Company's Offices, 9 Regent Road, Liverpool |
| | **ROADS AND CARTAGE:** | | |
| Nov. 26 | London, W.—Road Making | Ealing Urban District Council | C. Jones, Borough Engineer, Town Hall, Ealing, W. |
| „ 26 | Birmingham—Material | Warwickshire County Council | J. Willmot, County Surveyor, Birmingham. |
| „ 26 | Cardiff—Paving, &c. | Corporation | C. H. Priestley, Waterworks Engineer, Town Hall, Cardiff. |
| „ 26 | Haworth, Yorks—Setts, &c. | Urban District Council | W. Robertshaw, Clerk, Burlington Chambers, North St., Keighley. |
| „ 26 | Rickmansworth—Granite | Urban District Council | Surveyor, Town Hall, Rickmansworth. |
| „ 26 | Ware, Herts—Road Improvement | Urban District Council | J. E. Smiles, Surveyor, New Road, Ware, Herts. |
| „ 27 | Elgin, Scotland—Road Metal | —— | A. Hogg, 24 Academy Street, Elgin. |
| „ 27 | Waltham Abbey—Channelling and Kerbing | Urban District Council | W. T. Streather, Surveyor, Highridge Street, Waltham Abbey. |
| „ 28 | Felling, Durham—Setts, &c. | Urban District Council | Council's Surveyor, Council Bldgs., Felling, R.S.O., Durham. |
| „ 28 | St. Annes-on Sea, Lancs—Street Works | Urban District Council | Surveyor, South Drive, St. Annes-on-Sea, Lancs. |
| 30 | Leeds—Levelling, &c. | Rural District Council | E. J. Silcock, 10 Park Row, Leeds. |
| „ 30 | Dublin—Flags, &c. | Midland Great Western Rly. Co. of Ireland. | General Stores Department, Broadstairs Station, Dublin. |
| Dec. 1 | London, E.C.—Paving | Corporation | Engineer, Public Health Department, Guildhall, E.C. |
| „ 3 | Wanstead—Paving | Urban District Council | C. H. Bressey, Council Offices, Wanstead. |
| „ 3 | Southend-on-Sea—Tar Macadam | Corporation | E. J. Elford, Borough Surveyor, Southend-on-Sea. |
| „ 3 | Chatham—Materials | Corporation | C. Day, Borough Surveyor, Town Hall, Chatham. |
| „ 7 | Carshalton—Making-up | Urban District Council | W. W. Gale, Surveyor, High Street, Carshalton. |
| „ 7 | Hoddesdon, Herts—Kerbing, &c | Hertfordshire County Council | U. A. Smith, County Surveyor, Hatfield. |
| „ 16 | Levenshulme, Lancs—Private Street Works | Urban District Council | J. Jepson, Surveyor, Guardian Chambers, Tiviot Dale, Stockport. |
| 1904.<br>Jan. 19 | Rotherhithe and Radcliffe—Carriageway | London County Council | Engineer's Department, County Hall, Spring Gardens, S W. |
| | **SANITARY:** | | |
| Nov. 26 | West Wylam, Northumberland—Sewage Works | Rural District Council | J. E. Parker, Post Office Chambers, Newcastle-on-Tyne. |
| „ 27 | Lichfield, Staffs—Sewerage Works | Corporation | Elliott & Brown, Engineers, Burton Buildings, Parliament Street, Nottingham. |
| „ 27 | Warrington—Drain Pipes, &c. | Cheshire Lines Committee | S. S. Barton, Stores Superintendent, Cheshire Lines, Warrington. |
| „ 28 | Felling, Durham—Sanitary Pipes | Urban District Council | Council's Surveyor, Council Bldgs., Felling, R.S.O. Durham |
| „ 30 | London, N.—Sewers, &c. | Hornsey Borough Council | E. J. Lovegrove, Borough Engineer, Municipal Offices, Southwood Lane, Highgate, N. |
| „ 30 | Thornton, near Poulton-le-Fylde, Lancs—Sewerage Works | Sewerage Committee | A. Hindle, 44 Abingdon Street, Blackpool. |
| Dec. 1 | Brighton—Sanitary Appliances | Guardians | H. S. Reed, Parochial Offices, Princes Street, Brighton. |
| „ 3 | Castletownbere, Ireland—Sewerage Works | Rural District Council | R. Evans, 53 South Mall, Cork. |
| „ 3 | Southend-on-Sea—Sewers | Corporation | E. J Elford, Borough Surveyor, Southend-on-Sea. |
| „ 3 | Trowbridge, Wilts—Sewers | Urban District Council | H. G Nicholson-Lailey, Engineer, Town Hall, Trowbridge. |
| „ 9 | Wonersh, Surrey—Sewers, &c. | Hambledon R.D.C | E. L. Lunn, 36 High Street, Guildford. |
| „ 11 | Newton, Scotland—Sewers, &c. | District Committee | W. L. Douglass, District Surveyor, District Offices, Hamilton. |
| | **TIMBER:** | | |
| Nov. 26 | Spezia, Naples and Venice—Fir Wood | —— | Commercial Intelligence Branch, Board of Trade, 50 Parliament Street, S.W. |
| „ 26 | Greenock—Timber | Harbour Trustees | Engineer, Municipal Buildings, Greenock. |
| „ 27 | Warrington—Sleepers, &c. | Cheshire Lines Committee | S S. Barton, Stores Superintendent, Cheshire Lines, Warrington. |
| „ 28 | Swansea—Timber | Harbour Trustees | Engineer, Harbour Office, Swansea. |
| „ 30 | Copenhagen—Timber, &c. | Danish State Railways | Office of Locomotive Department (3 Sal), G. C. Kongevej, 1, D, Copenhagen. |
| „ 30 | Dublin—Timber, &c. | Midland Great Western Rly. Co. of Ireland. | General Stores Department, Broadstone Station, Dublin. |
| „ 30 | Dublin—Timber | Dublin United Tramways Co. | R. S. Tresilian, 9 Upper Sackville Street, Dublin. |
| Dec. 2 | Dublin—Timber | City of Dublin Steam Packet Co. | Company's Offices, 9 Regent Road, Liverpool. |
| 1904.<br>Jan. 15 | Cape Town—Timber | Government Rly. Department | Railway Stores, Cape Town. |
| Dec. 1 | Natal—Sleepers | Government of Natal | Agent-General for Natal, Natal Government Agency, 26 Victoria Street, Westminster. |

# List of Competitions Open.

| DATE OF DELIVERY. | DESIGNS REQUIRED. | AMOUNT OF PREMIUM. | DEPOSIT REQUIRED FOR CONDITIONS, &C. | BY WHOM ADVERTISED. |
|---|---|---|---|---|
| Nov. 30 | Bray—Pavilion and Winter Gardens | £30, £15, £10, and 3 prizes of £5 5s. each. | —— | F. Bethell, E. Lee and P. MacDonnell, Hon. Secretaries, Town Hall, Bray. |
| Dec. 1 | Wakefield—Reconstruction of Cattle Market | £52 10s., £26 5s. | £2. | E. R. Langhorne, Clerk to Governors of Charities, Wakefield. |
| „ 7 | Elgin—School Buildings (340 pupils) | —— | —— | H. Stewart, Clerk, Landward School Board, Elgin. |
| „ 7 | Selly Oak, near Birmingham—Public Baths | —— | £1 1s. | A. W. Cross, 23 Valentine Road, King's Heath, near Birmingham. |
| „ 10 | Clare, Suffolk—Water Supply Scheme Advice | — | —— | J. Bigmore, Clerk, R D.C., 24 Queen Street, Haverhill, Suffolk. |
| „ 16 | Lambeth, S.E.—Public Library | —— | —— | H. J. Smith, Clerk, Town Hall Kennington Green, S.E. |
| 1904.<br>Jan. 15 | Windsor—Police and Fire Brigade Stations | £26 5s. | £1. | E. A. Stickland, Borough Surveyor, Town Council Offices, Windsor. |
| Feb. 1 | Erdington—New Council House & Free Library | £50, £30, £20. | £1 1s. | H. H. Humphries, District Engineer, Public Hall, Erdington, Birmingham. |
| Mar. 31 | Vienna—Machinery to Lift Boats on Canal | 100,000, 75,000 & 50,000 kronen. | —— | Austro-Hungarian Consulate-General, 22 Laurence Pountney Lane, E.C. |

**Advertisement Aphorism for the Week.**

*Judicious advertising makes the prosperous business and keeps it prosperous.*

## Appointments Wanted.

*The charge for Advertisements under this heading is 1s. 6d. per insertion not exceeding four lines, and 6d. per line afterward, prepaid. Three insertions may be had for the price of two. Advertisements must reach the Office not later than 5 o'clock on Monday.*

ADVERTISER (33), a competent Surveyor and Draughtsman, with wide experience of construction and materials, offers his services temporarily for nominal salary in return for practise and expert instruction in quantity work. — Write "Practise," BUILDERS' JOURNAL Office, 6, Great New Street, Fetter Lane, E C.

AN ARCHITECT has TIME to ASSIST others with Working Drawings, Details, and Perspectives at own office. Special terms for Competitions. Good gěneral experience—Apply, H. L. FEDDEN, 11, Hart Street, Bloomsbury.

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ARCHITECT'S ASSISTANT desires APPOINTMENT in London office; 5 years' varied experience (2½ years Technical School · practical work—and 2½ years articles); good draughtsman; knowledge of surveying; salary a secondary consideration; highest credentials, and undeniable references; life abstainer.—Box 2655, BUILDERS' JOURNAL Office, 6, Great New Street, Fetter Lane, E.C.

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A. R.I.B.A. with spare time desires to assist in the preparation of Architectural Drawings and Perspectives.—Apply Box 2630, BUILDERS' JOURNAL Office, 6, Great New Street, Fetter Lane, E.C.

BRICKWORK and POINTING WANTED by practical man. Rod or job. Good references. Distance no object.—Address, X. Y. Z., 133, Derby Road, Ilford, Essex.

BRICKWORK AND POINTING, &c., wanted; Scaffolding and Materials if wanted; good refs.—H. F. MEADER, 39, Albert Road, Peckham, S.E.

BRICKWORK or POINTING WANTED by competent man. Any quantity, at most reasonable prices.—Apply W. S., Burlington Place, Woodford Wells, Essex.

BRICKWORK and POINTING WANTED, labour only, by practical experienced man, just finishing large job in East End.—E. M., 41, Sewardstone Road, Victoria Park.

BUILDER'S CLERK (26) desires re-engagement; shorthand, tracing, and general office routine. Moderate salary.—Box 2651, BUILDERS' JOURNAL Office, 6, Great New Street, Fetter Lane, E.C.

CLERK OF WORKS seeks RE-ENGAGEMENT. Thoroughly practical in all trades. Experience in hospital and public building construction. First-class references and testimonials.—D., 9, Homefield Road, Chiswick.

CLERK OF WORKS, shortly disengaged. Finishing seaside hotel. Practical, reliable, conversant. Details, measurements. References.—P., 29, Smith Terrace, Chelsea, S.W.

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# Coming Events.

**Wednesday, November 25.**

Edinburgh Architectural Association.—Mr. David M. Nesbit, M.I.C.E., on "Warming and Ventilation," at 8 p.m.

Sanitary Institute (Lectures and Demonstrations for Sanitary Officers, Part II.).—Mr. E. Petronell Manby on "The Laws. By-laws and Regulations affecting the Inspection and Sale of Meat, &c.," at 7 p.m.

Northern Architectural Association.—Council Meeting at 6.45 p.m. Rev. Canon Savage, M.A., on "The Development of the distinctly English Type of Church," at 7.30 p.m.

Society of Arts.—Mr. G. F. Parker on "The Universal Exposition at St. Louis, U.S.A., 1904," at 8 p.m.

Institution of Civil Engineers.—Students' visit to the Great Northern Railway: Underground Stations at Finsbury, at 2.24 p.m.

**Thursday, November 26.**

Sanitary Institute (Lectures and Demonstrations for Sanitary Officers, Part II.).—Inspection and Demonstration at the Metropolitan Cattle Market, York Road, N., at 2 p.m., conducted by Mr. James King.

Camera Club.—Mr. E. R. Ashton on "Picturesque India," at 8.15 p.m.

Builders' Benevolent Institution.—Annual Dinner, Whitehall Rooms, Hotel Metropole (Sir Weetman D. Pearson, Bart., M.P., President, in the chair) at 6 p.m.

Institution of Electrical Engineers.—Mr. R. Threlfall, M.A., F.R.S., on "Electric Generators by Air Calorimetry." Mr. W. Hibbert on "The Edison Accumulator for Automobiles," at 8 p.m.

**Friday, November 27.**

Birmingham Architectural Association.—General Meeting Mr. Warren Blackshaw, junior, on "Acoustics in relation to Architecture," at 6.45 p.m.

**Saturday, November 28.**

Glasgow Technical College Scientific Society.—Mr. J. Herbert Pocock on "Some Remarks on the Willan's Engine," at 7.30 p m.

**Monday, November 30.**

Royal Institute of British Architects.—General Business Meeting.—Election of Candidates for Membership. Discussion of Professional and other Questions.

Society of Arts (Cantor Lectures).—Mr. Bennett H. Brough on "The Mining of Non-metallic Minerals: II. Salts," 8 p.m.

**Saturday, December 1.**

Exhibition of Art Applied to Manufactures, at Shire Hall, Chelmsford, at 3 p.m. Open till Saturday, December 5th.

**Wednesday, December 2.**

Institute of Sanitary Engineers.—Meetings of General Purposes and Finance Committee at 4.15 p.m. and Election Committee at 5.15 p.m. Sessional Meeting at 7 p.m. Mr. H. Harcourt Verden (Messrs. Davies & Verden, solicitors) on "Sanitary Law."

Society of Arts.—Sir Charles Malcolm Kennedy on "The Fiscal Problem," at 8 p.m.

Northern Architectural Association.—Students' Evening.

Architectural Association (Discussion Section).—Mr. H. T. B. Spencer, A.R.I.B.A., on "Theatres," at 7.30 p.m.

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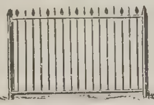

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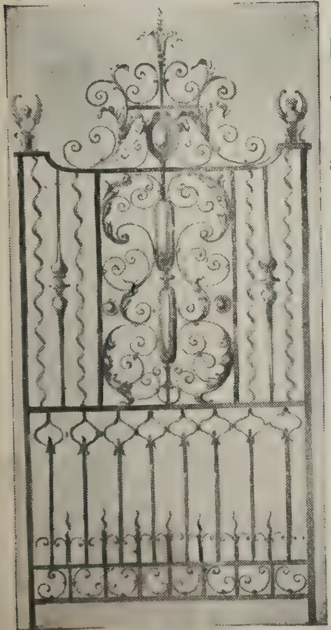

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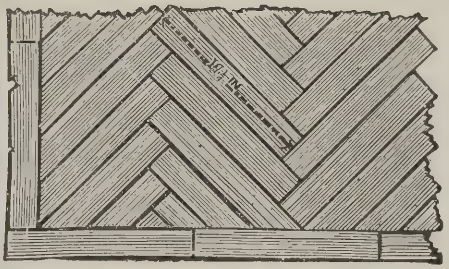

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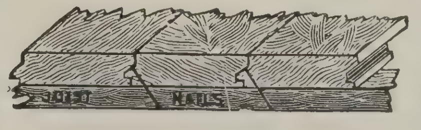

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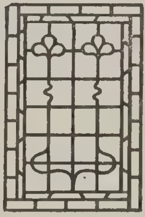

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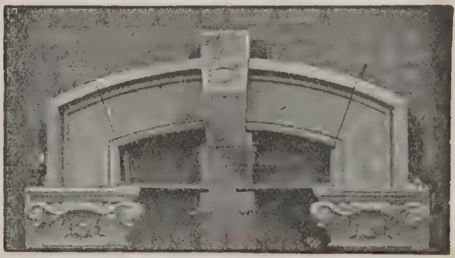

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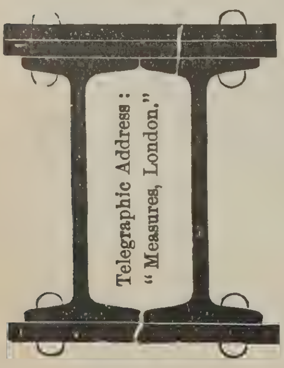

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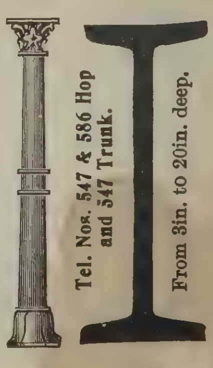

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THE

# BUILDERS' JOURNAL

## AND ARCHITECTURAL RECORD.

December 2, 1903. Vol. 18, No. 460

6, Great New Street, Fetter Lane, E.C.

## Summary.

Washington is now building a fine new railway station, said to eclipse both the Frankfort and Hamburg stations, and the new terminus of the Orleans railway in Paris. (Page 244.)

The "Depôt des Marbres" at the Louvre is threatened, in order that a new palace for the French Colonial office may be erected on the site. It is the Government storehouse for sculpture, and in its ateliers Jean Paul Laurens, Béroud, Guillaume and Rodin might be seen at work. (Page 243.)

A new school of art for Edinburgh is proposed to be formed on the lines of the Glasgow school. It is also proposed that a new building shall be acquired for the National Gallery in Edinburgh. The Royal High School (a fine classic building erected in 1829 from the designs of Thomas Hamilton) is suggested as a suitable home for it. (Page 244.)

Mr. Joseph Wood, F.R.I.B.A., president of the Bristol Society of Architects, held an "At Home" last week, following Mr. Aston Webb's example. (Page 242.)

The First Ingram House, a residential club for clerks and young men in business, is being built at Stockwell. (Page 242.)

In a lecture on "The Distinctively English Type of Church," which he delivered before the Northern Architectural Association last week, the Rev. Canon Savage said that the Perpendicular was the type of the plain, common-sense, average Englishman. (Page 244.)

In the concluding article on builders' office work the two main systems of book-keeping, single and double entry, are elucidated in regard to the several journals which a builder needs to keep. (Page 239.)

The third edition of Mr. Dibdin's book on the purification of sewage and water is made unnecessarily bulky by the inclusion of the minutiæ and detail attending the earlier experiments at Massachusetts, London, Sutton and elsewhere; but it is still the standard work on the subject. (Page 236.)

In a lecture on Truro Cathedral Precentor Donaldson said that two-thirds of the cost was paid for labour to those employed on the works, and a great deal of the money had gone into the pockets of Cornishmen. (Page 243.)

The agreement for the preservation of the view from Richmond Hill has now been sealed between the London County Council and Sir J. Whittaker Ellis. (Page 242.)

It is suggested that the painted front of Buckingham Palace should be scraped, to make it a fitter background for the Memorial. (Page 242.)

Mr. David M. Nesbit, in a paper which he read before the Edinburgh Architectural Association last week, said that not less than 1,800 to 2,000 cub. ft. of air per hour should be provided for each child in public schools. (Page 242.)

**Painting Stonework.** To those who take their walks abroad in London, and particularly in the suburbs, few things are more noticeable than the growing use of white paint. Suburban villas, perhaps, exhibit more of this practice than the central regions. Its introduction coincided with the revival of red brick as a building material, but its use was confined to woodwork, especially in houses of the popular style known as "Queen Anne" and small cottages or semi-detached villas: the reaction against stucco terraces was strong, almost violent, and a bright contrast of colour was welcomed. Quite recently the use of white paint has been extended to stonework; it is spreading rapidly, and the question is whether the result is altogether satisfactory from the æsthetic and architectural point of view. Precedents for painting stone may be found, and even marble has been so treated; in Italy, where stone and marble quarries abound, these materials are often used in the construction of walls, which are then covered with stucco and painted, sometimes in a single colour, sometimes in two complementary colours, as in Rome, where many examples may be seen in the principal streets. The Greeks applied colour to their temples; our own mediæval churches contain many Gothic tombs whose recumbent effigies of fine marble are painted. But how are such things to guide us in our treatment of new villas? Here the question would seem to be one of colour only. When red brick virtually superseded all other materials for building purposes about a quarter of a century ago, it was accompanied by the adoption of white freestone for dressings and details; it was essentially a revival of the materials that had been mainly used in England, especially in the midland and southern counties, during the sixteenth and seventeenth centuries, when our domestic architecture was at its best. Another consideration was largely in the architects' minds: the green foliage of English trees and shrubs were looked upon as adjuncts; and time, which does so much to tone down and harmonize architecture, was expected to do the same with the new designs. On the whole these expectations have been fulfilled; occasionally, indeed, the endless use of red brick and white freestone has become rather irksome, and something in the nature of a reaction may be traced; rubble, half-timber and occasionally "pargeting" work are coming into favour. But the very latest fashion seems to threaten all our harmonies in English building art with something like destruction; the stonework of copings, balconies, mullions and entablatures in hundreds of houses is being painted a staring white. The effect in cases where heavy mullions and strongly marked gables, besides all the external woodwork, are thus treated is harsh and unpleasant. What is wanted in colour is what is also wanted in form—the sense of harmony.

**Welsh Slates.** It has been estimated that the Penrhyn quarry dispute cost the district £364,000 in wages alone, besides which there was a large importation of slates owing to the shortage in the home supply. Before the strike, which began in October, 1900, the amount of the imports was almost negligible, but for the quarter ended March, 1901, it was 15,702 tons, and for the quarter ended September 30th it was 31,581 tons. It is feared that the slate trade of North Wales has been permanently injured by the strike.

**Irish Granite Resources.** Last March, in noticing the departmental exhibition of Irish building materials at the Imperial Institute, we drew attention to the fact that vast supplies of most excellent marble and granite existed, unworked, in Ireland; owing chiefly to the want of capital, the lack of proper railway connections, and to the conservatism which holds on to old-fashioned hand methods. A correspondent now draws our attention to the Irish granite resources, especially those of co. Down. He says that those of the Mourne range would rebuild all the cities in Europe and leave a big surplus to boot—which is perhaps a figure of eloquence we must forgive him. However, he assures us that the industry, if encouraged, would give employment to thousands of hands. "How would Aberdeen and Dalbeattie like to see shiploads of granite landed at their doors for building and other purposes; yet this is done in an enlightened city in Ireland, better known as Belfast. Within two hours' journey by rail and road there exists a mountain 1,300ft. high of the finest granite in Europe, well adapted for dock building or monumental work. It is almost incredible that not only is there a large supply of granite imported annually into Belfast from Scotland, but another large supply comes from Norway, whence came the granite for the York Dock. Not only does this Norwegian supply come to Belfast, but actually large consignments are exported from that country to our colonial possessions, including South Africa, as well as the cities of the United States and the Spain Main, and in some of these Norwegian quarries 1,300 hands are employed daily. . . . It is curious to observe that in all these Mourne mountain ranges of Down one hardly ever meets a child acquainted with the use of a hammer or chisel for sculpture work."

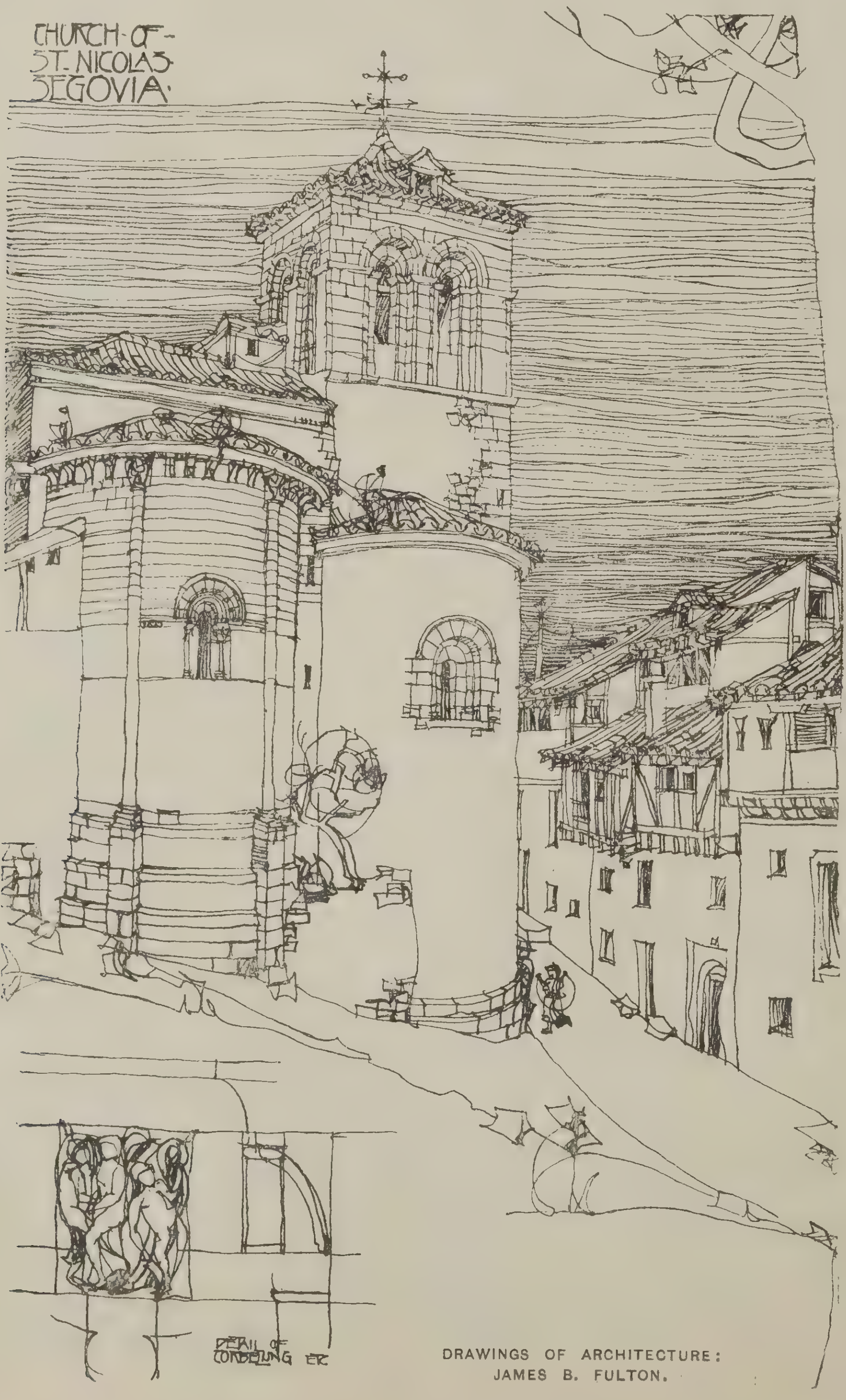
# DRAWINGS OF ARCHITECTURE.

We continue our series of drawings of architecture this week with two by Mr. James B. Fulton, two by Mr. Percy Wadham, A.R.E., and one by Mr. M. H. Baillie Scott.

Mr. Fulton made his name as a draughtsman in the Institute competitions, and by this time most architects have seen reproductions of some of his drawings, if not the originals themselves. The two which we now publish exhibit that peculiar treatment of line work which Mr. Fulton has adopted so skilfully. On looking closely at the drawings we see that there is not a single line which could be strictly called straight —not even those which represent straight lines in the actual building; yet, as a whole, we are hardly conscious of the irregularity: besides which Mr. Fulton has introduced a treatment of the sky that greatly adds to the effect of the drawing, though it may not be true to Nature. It need scarcely be pointed out that these two drawings are very clever; maybe they have become a little too clever: for in the drawing below we are at a loss to understand what the scriggles in the foreground are intended to indicate, and we do not know whether those strange tangles on the apse wall and on the roofs are vegetable growths or sudden spasms of the pencil which delineated them. Mr. Fulton would, we think, do well to allow his undoubted skill to run on less eccentric lines. With so much that is admirable in the drawing on the opposite page we cannot help regretting that the paving should have been put in so strangely, for, as a fact, it looks more like sheets of paper laid over one another than stones.

From the examples published in former issues of our journal, readers are familiar with Mr. Wadham's line work: so that the drawing in the centre plates this week and the delightful detail of a doorway on p. 236 are especially interesting. We can have little to say in regard to these, for they speak for themselves; and though drawn by an artist they exhibit a very careful feeling for the architectural construction, while the detail is rendered admirably.

The note beneath Mr. Baillie Scott's drawing on p. 238 explains his views on the subject. Regarded from one standpoint they are forcible enough, yet we call to mind several drawings of interiors by Mr. Scott which were most carefully finished in colour —charming examples of draughtsmanship. We had hoped to publish one of these; perhaps Mr. Scott may yet enable us to do so: it will then be suggestive to compare the two.



DRAWINGS OF ARCHITECTURE: JAMES B. FULTON.

# Views and Reviews.

### Pumps.

Mr. Wright Clarke's book on pumps, of which a second revised edition has just been issued, can be recommended to all pump users, though not to pump designers. It is a good elementary book, which is all it claims to be, and, like most of Mr. Clarke's writings, is lucid in its descriptions. We regret to see, however, that numerous formulæ are given without hardly any explanation of how they are derived. It would also be a good feature if the results of tests on different pumps were accompanied by conclusions and a comparative discussion of their merits, as the fund of information at present available is in a chaotic form. Undershot and overshot water-wheels are dealt with in the book, but not turbines—a rather considerable omission; also no special attention is paid to sewage lifts and other very important branches of pump-work. These facts militate against the book being considered in any sense a standard one. The new edition is printed in clearer type and the illustrations have been re-drawn.

"Pumps: Their Principles and Construction. A series of lectures delivered at the Polytechnic Institute, Regent Street, London." By J. Wright Clarke. London: B. T. Batsford, 94, High Holborn, W.C. Price 3s. 6d. nett.

### The Small-House Problem.

The idea set forth in this booklet of a dozen pages is commendable enough, but it does not solve the small-house problem. Everyone with any sense of enlightenment must deplore the wretched streets of cottages which the speculative builder erects, but we fear the authors' proposal will not do away with them, for the simple reason that it costs more. We are asked to consider a plot of land bordered by a railway on two sides and by a high road on the other two sides. We are shown how, by the ordinary method, the houses are packed back to back with a tiny piece of garden to each. We are then shown how, by building semi-detached blocks of two cottages and arranging them after the manner of a chess-board, each house has quite a respectable piece of unobstructed garden, and, in addition, a pleasant outlook southwards. The authors (who, by the way, are architects of Buxton) assure us that no "more space is occupied by cottages arranged in the manner suggested"; we have taken the trouble to count them, however, and find that on the plot of land taken as an example the speculative builder gets 427 houses, while the authors get 320. For that reason the scheme does not come within the region of practical building for the working-classes, though the idea is adaptable to estates with middle-class houses. The plans themselves are straightforward, though we would point out that the inglenook provided around the cooking-range in the one living-room would keep off the light from the former and so making cooking arrangements difficult.

"Cottages near a Town," by Barry Parker and Raymond Unwin. Manchester: Chorlton & Knowles, The Mayfield Press.

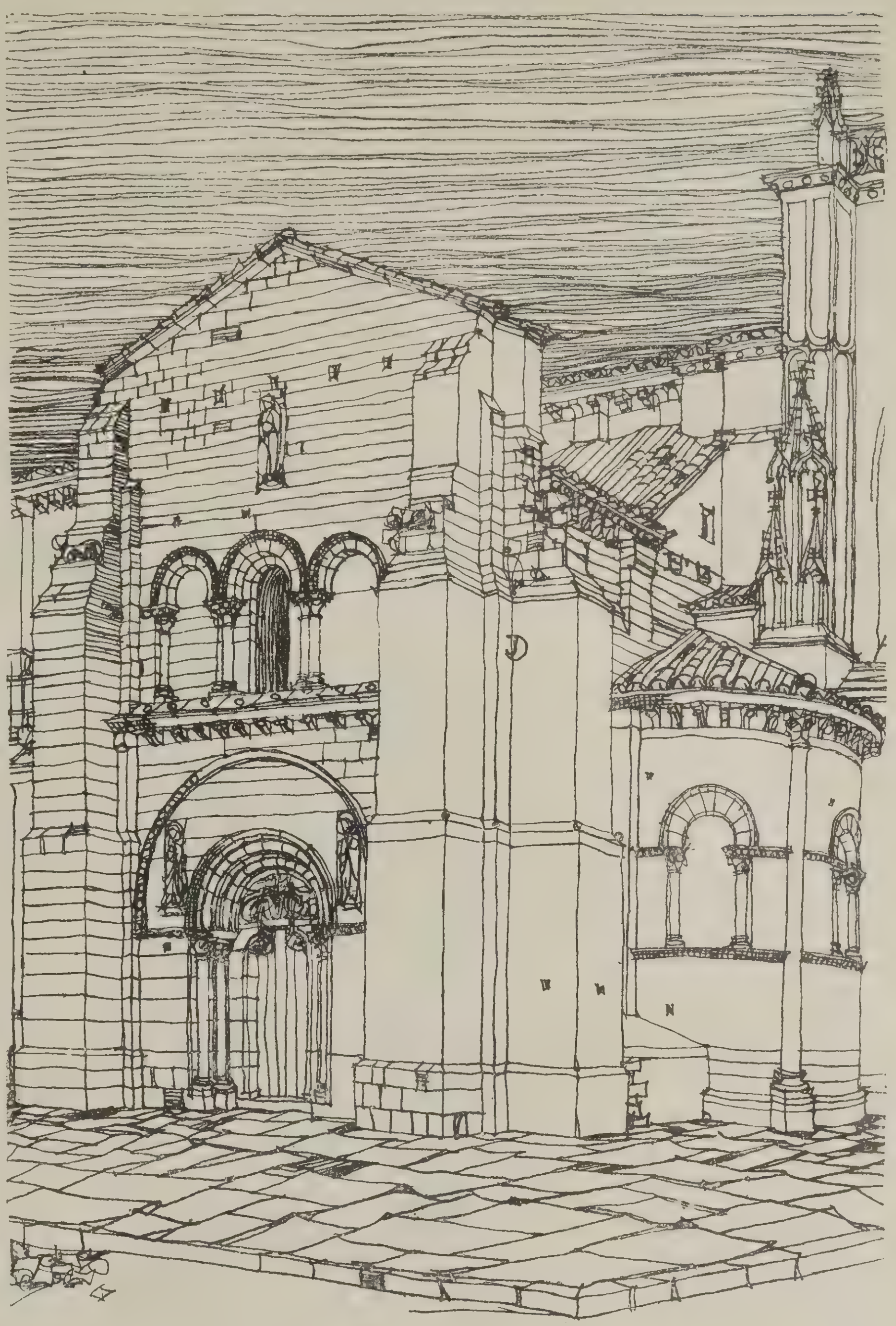
### Gas Engines.

Mr. Powis Bale's book on gas and oil engine management embodies the experience of many years and is full of practical hints which will be found of great help to anyone unaccustomed to these forms of power. It is divided up into paragraphs collected under various side heads, and, in addition to being very readable on this account, is very easy to refer to. Constructional details are given about the selection and fixing of gas engines, the calorific values of the various gases, &c.; after which the principles are dealt with, and it is explained how the four stages—compression, ignition, outward stroke and exhaust—are to be adjusted, how misfires and back-fires are to be avoided, which kinds of valves, piston rings, &c., are preferable; while finally there is a chapter on oil engines, and another full of useful rules and tables about horse-power, efficiency, tests, &c. The book summarises modern practice, and enables anyone to understand how a gas engine works, what may be wrong with it, and what is to be expected from it.

Mr. Tookey's book also deals with the subject in a similar manner. From the enthusiasm displayed in the first few pages the reader might suppose he had tumbled across an advertiser, but the author very soon proceeds to deal with specific details, and supplies a large amount of information useful to purchasers, erectors and attendants.

"Gas and Oil Engine Management," by M. Powis Bale, M.I M.E., A.M.I C.E. London: Crosby Lockwood & Son, 7, Stationers' Hall Court, E.C. Price 3s. 6d. nett.

"Gas Engines: Their Advantages, Action and Application," by W. A. Tookey. London: Merritt & Hatcher, Ltd., 2, Grocers' Hall Court Poultry, E.C. Price 1s.



·THE·CHURCH·OF·
·SAN·ISIDORO·EL·
·REAL· LEON·

DRAWINGS OF ARCHITECTURE: JAMES B. FULTON.

### The Compleat Carpenter and Joiner.

The sixth divisional volume of this work continues the chapter on Carpentry by the editor, dealing with floors and ceilings, vaulting and niches, partitions, timber buildings, bridges and temporary structures. A chapter on Wood-carving is contributed by Mr. Harry Hems, the head of the well-known firm of wood and stone carvers of Exeter, and another chapter is begun on Stairs and Handrailing by Mr. George Miller. The space devoted to timber buildings is quite inadequate to the subject, though as far as it goes the matter cannot be objected to; it is very general, however, and betrays some ignorance of practical work in the design and erection of timber-framed buildings. The combination of different materials has introduced multifarious conditions which have in the past produced many constructive expedients and new forms, and the conditions of to-day have and are likewise materially altering the form and construction of timber buildings; it is these old and new influences, and their effects, which we expect to be dealt with in a book pretending to the completeness this one does. Most of the plates in the parts written by the editor were published many years ago—they are of course very useful, but we ought to have modern examples as well, and not simply one period illustrated fully because some old authors who knew their subject thoroughly have gathered information for the editor to appropriate and no modern author has given him the same opportunity. Mr. Harry Hems writes very fluently and entertainingly on wood-carving. He first deals with the historic aspect of the art, shortly, though quite full enough for a book on construction. His treatment of the practical side of the subject is wholly admirable, but in concluding he allows himself a freedom that results in several unnecessary illustrations being inserted, two (of panels) being worse than useless, and giving one the impression of gratuitous advertisements of the author, as the work was executed in his studios. Why, too, obtrude five verses of bad poetry in a scientific treatise on construction? Mr George Miller begins well on stairs and handrailing, and includes a combination coloured plate of details of close and open string-stairs after the manner of anatomical plates, so that when the flaps are lifted up the inner construction is shown. This might often be done in text-books with very great advantage.

"The Modern Carpenter, Joiner and Cabinet-maker." Divisional Volume VI. Edited by G. Lister Sutcliffe. London: The Gresham Publishing Co., 34, Southampton Street, Strand, W.C. Price 7s. 6d. per volume.

### The Design of Pattern.

Mr. Day has written so many books on pattern and ornament, under various guises, that we rather feared another on a well-worn theme. This book, however, is not a repetition of his "Anatomy of Pattern" but a re-writing and amplification of it; and as it now stands it is an excellent practical treatise on the subject. Mr. Day is a dissector, and the manner in which he shows how all kinds of patterns are built up, how they are all more or less governed by certain controlling lines repeated over the width and length of the material, is as clear and—if we might dare use the word—as "scientific" as anyone could wish. Moreover, he shows how conditions of manufacture have to be studied, and what a number of devices the weaver and the wallpaper-printer employ to secure the economical working of the pattern. These latter considerations are so important and so little understood that we think a chapter at the beginning of the book explaining briefly how carpets and hangings are woven, and how tiles and wallpaper are printed, would be of inestimable advantage. True, the subject is dealt with to some extent towards the latter part of the book, but in a manner which can only be properly understood with a prior knowledge of the actual methods of manufacture. Mr. Day says a great many excellent things, not one more true, however, than that the way to avoid the appearance of formality in a design is *not* to set to work haphazard.

Every real pattern must have its governing lines and must be set out on some regular basis. By the numerous illustrations that accompany the text Mr. Day shows how this is so. The book is produced in the best possible manner, and deals most thoroughly with the subject of pattern design.

"Pattern Design," by Lewis F. Day. London: B. T. Batsford, 94, High Holborn, W.C. Price 7s. 6d. nett.

### The Purification of Sewage and Water.

The third edition, revised and enlarged, of Mr. Dibdin's great work presents a formidable task to the reviewer. Indeed, a preliminary survey of the book discloses such a plethora of reports, large folded-in tables, summaries of experiments, plans, sections and details of experimental and other apparatus, that the first feeling is akin to despair. The author rightly takes credit for the fact that the bacterial principle enunciated in his first edition of 1896, then practically ridiculed, has established its accuracy, and is admitted on all hands. We think this fact should have militated against the inclusion in this edition of all the minutiæ and detail attending the earlier experiments in Massachusetts, London, Sutton and elsewhere. Mr. Dibdin's readers are not so exigent as to require him at this time of day to laboriously prove his thesis by the insertion of every jot and tittle of evidence bearing upon the initial controversial points. The summary or tabular statement of the results achieved in the instances mentioned would have been accepted as correct. The result of this exhaustive treatment is unfortunate, not merely in that it pads the work unduly, but because the essentials become obscured and are difficult to elucidate. And it is in regard to these essentials we require very definite and authoritative information. The bacterial principle itself is in no danger of refutation. Its adoption for dealing with the small volumes of sewage from the minor towns is not only desirable but has been proved economical and practicable. But in dealing with the immense daily flows of our large cities bacterial purification may still be said to be on trial. That it can effect the purification of any amount of sewage with time is certain; but in these matters time is, unfortunately, a dominant and governing factor. The period required for contact and resting the beds may mean the increase of the tank and filter accommodation to a burdensome degree. Manchester has been confronted by the necessity of enlarging its sewage farm to an area of over 92 acres. Very precise information might be expected from the work in dealing with these difficulties; but Mr. Dibdin does not afford them. He may very properly plead that the time for dogmatism is not yet come; that he deals only with the scientific side of the principle, leaving its practical working-out to the engineers and the purse of the ratepayers. We do not believe, however, that Mr. Dibdin is one of those scientists who consider it beneath their dignity to direct the results of their discoveries for the benefit of the community. It is well known that the author made a free gift of the results of his labours to the world, and that proprietors of purification processes embodied those results in their systems, announcing the same as "patented," the only patentable part of the process being generally the use of some piece of ironwork, which had no bearing on the fundamental laws of bacterial action. It is from the proprietary systems we desire to be saved, and we look to men like Mr. Dibdin to lay down clearly and decidedly the essentials of bacterial purification so that every engineer may think out his own system, conformably with the innate peculiarities of the sewage under his charge. At present the community drifts somewhat helplessly to the proprietary systems, involving, as the author aptly puts it, "the question of expensive patent rights." Upon the controversy, still unsettled, as to the necessity of employing the services of both anaërobic and aërobic bacteria to deal with sewage the author appears to hesitate to give a definite opinion, though reading between the lines it is plain that the septic tank is not regarded by him as essential. We do not think we shall be doing Mr. Dibdin an injustice if we summarize the results of our reading in the following points, which we think correctly state the present position of bacterial purification.

1. That efficient land purification only is a proper and natural treatment of sewage, and that the bacterial principle is the fundamental one underlying land treatment.

2. That land treatment alone or as the main feature of a purification system is inadvisable in most cases, bearing in mind the limited amount of land generally available and its cost, and the large volumes of sewage that have to be dealt with daily.

3. That the present application of the bacterial principle by means of tanks and filter beds may be considered an artificial land treatment in which the natural action is assisted and quickened.

4. That purification can be effected without the aid of the anaërobic bacteria, and that they should be dispensed with wherever possible, because of the offensiveness of their working, and because the process may be carried so far as to interfere with the subsequent necessary aërobic treatment.

5. That the action of the anaërobic bacteria in breaking up the solids in suspension, and thus assisting the life of the contact beds, may be carried out equally well by careful preliminary screening and the use of detritus tanks.

6. That preliminary chemical precipitation to deal quickly with the solid matters in large volumes of sewage is not necessarily inimical to subsequent bacterial action, provided only just sufficient chemical is used to effect the precipitation.

7. That the use of septic, detritus or precipitation tanks involves subsequent trouble with offensive sludge.

8. That the double contact system—*i.e.*, treatment on a coarse and subsequently on a fine bed—will accomplish all purification without offensive odours and does away with the sludge difficulty, but the beds require periodically to be remade, the material taken out requiring twelve months to recover before re-use.

9. That to obtain an effluent that is sterile and of the first quality the double contact must be followed by treatment on suitable land or filtration through fine sand or breeze.

10. That antiseptics must not be used in dealing with sewage, but deodorants; permanganate of soda is recommended.

An ideal system, according to Mr. Dibdin, would appear to embody — (*a*) deodorization, where necessary, in the sewers by means of permanganate of soda; (*b*) careful fine screening on arrival at the outfall works; (*c*) double contact beds; (*d*) fine sand or breeze filters; (*e*) land treatment as an alternative to the latter and a general stand-by to the system.

If we have cavilled at the inclusion in the book of much matter that we think superfluous, it would be ungrateful not to acknowledge Mr. Dibdin's immense services to sanitary science and the great labour involved in writing this standard text-book. Frequently a charge of redundancy is an acknowledgment of thoroughness, and Mr. Dibdin has dealt with his subject exhaustively. If, when the fourth edition is published—and we doubt not it will soon be required—he will omit a good deal of the earlier matter

DRAWINGS OF ARCHITECTURE: BY PERCY WADHAM, A.R.E.

and deal more particularly with later developments, or write a separate volume embodying the conclusions given in the present work, he will add immensely to our obligations. We have not left ourselves must space to touch upon water purification, which occupies the latter part of the book. The author strongly insists on the daily analysis of potable water being treated as an ordinary duty of water authorities and companies, and points out that though, since the purchase of the London water concerns was mooted, their proprietors have taken daily analyses, it has been done for the protection of their interests at the arbitration, and not out of consideration for the consumer. Some interesting comparisons of London filtered water with Welsh unfiltered water are given, from which it is evident that the organic impurity of the unfiltered Welsh water is a little less than that in average London filtered water. This is due to the solid matter, principally salts of lime, which makes the London water hard, and the number of floating particles on which the number of microbes present depends to a large extent. The author recommends Clark's process, which would not only soften the water but enormously increase its purity.

"The Purification of Sewage and Water," by W. J. Dibdin, F.I.C., F.C.S. Third edition, revised and enlarged. London: Sanitary Publishing Co., 5, Fetter Lane, E.C. Price 21s. nett.

### Freehand Drawing of Ornament.

A new edition of this book has just been issued. It contains the same twenty-four photographic reproductions of relief ornament, with analytical diagrams above each. That it has been found useful to elementary students seems to be apparent from the fact that the present issue is the eleventh thousand.

"Freehand Drawing of Ornament," by John Carroll. London: Burns & Oates, Ltd., 28, Orchard Street, W., price 1s. 6d.

## Enquiries Answered.

*The services of a large staff of experts are at the disposal of readers who require information on architectural, constructional or legal matters. Questions should in all cases be addressed to the Editor. The querist's name and address must always be given, not necessarily for publication.*

### Book on Bungalows.

HULL.—ENQUIRER writes: "Kindly name a book on the planning of bungalows."

"Bungalows and Country Residences," by R. A. Briggs (price 12s. 6d. post free from these offices).

### Filling Spaces in Wood-Block Floors.

STOPPING writes: "The floor of a schoolroom is laid with wooden blocks placed endwise. The spaces between the blocks are very wide and I want to fill them up. What would you suggest? Is there any preparation to be bought which could be run in?"

Try a concrete composed of Petrifite cement and sawdust.

### A Course of Architectural Study.

LEICESTER.—J. R. E. writes: "I am 25 years of age, and since leaving school have been engaged in clerical work. About twelve months ago I obtained the post of financial clerk, book-keeper, &c., to an important firm of architects, surveyors and engineers. I wish to become a sort of extra or emergency assistant in addition to my present work, with a view to becoming an ordinary assistant later as draughtsman or quantity surveyor. Kindly advise me what to do."

It is difficult to advise you for the best in your present position, but assuming that you really intend to take up architecture and building seriously we think you would do well to go in for the thing thoroughly. With the time at your disposal it will mean several years of study, but you cannot help getting interested as you go on gaining knowledge. Do not limit yourself to construction, but study its artistic application. Read general books first, to gain an idea of the interdependence of the branches of knowledge appertaining to architecture and the building trades; read Ruskin's "Seven Lamps of Architecture" and the chapter on "The Nature of Gothic" in his "Stones of Venice": this is published separately; and follow on with same author's "Elements of Drawing." All these can be obtained from a public library, though you will never regret purchasing them. Join evening classes at the local technical school in geometrical drawing, and in a few weeks you will acquire sufficient knowledge to join the class in building construction. You should also join the freehand class, but do not devote more than three hours to any sketch (always rough in the whole construction of each object first, and if the shading is not completed by the end of the time, leave it and take another subject), as you want to draw more for your own use than for other people to look at, and also to acquire quickness and boldness in execution. When you can draw any object fairly easily you should sketch buildings—old ones of good style. For books on building construction obtain "Specification No. 6" and Rivington's "Notes on Building Construction." The latter is somewhat expensive, but will be of inestimable use throughout your life. You should study until you thoroughly understand the articles on "Building Construction" which appeared in our issues for September 25th, October 2nd, 23rd, 30th, November 6th, 13th, 20th, December 4th, 11th, 18th, 25th, 1901, January 8th, 22nd, February 12th and 26th, November 12th, 26th, December 3rd, 17th, 31st, 1902, January 14th, February 4th, 18th, and May 6th, 1903. You will find a slight knowledge of algebra and geometry will be required, and for this we advise you to read C. T. Millis's "Technical Arithmetic and Geometry" (price 3s. 6d.). After you have made some progress in elementary building construction, read Viollet-le-Duc's "Rational Building," and then Banister Fletcher's "History of Architecture." Such a course will put you well on the way to becoming a proficient architectural assistant, and you will then be more entitled to judge of what you will specialize in. Quantity surveying requires a most intimate knowledge of building construction and the manner work is practically executed. The above books can be supplied by us; the prices are stated in our book lists.

### Books on Small Public Libraries.

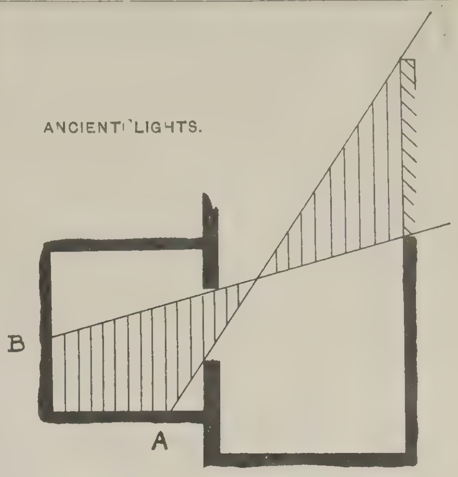
LAXEY.—SUBSCRIBER writes: "Is there any book published dealing with the erection and arrangement of public libraries suitable for small towns and villages?"

See an article by Mr. Maurice B. Adams, F.R.I.B.A., on Library Planning in "Specification No. 6" (price 5s. 9d.). A useful book is F. J. Burgoyne's "Library Construction" (price 6s.). These can be obtained from our offices post free for the prices stated.

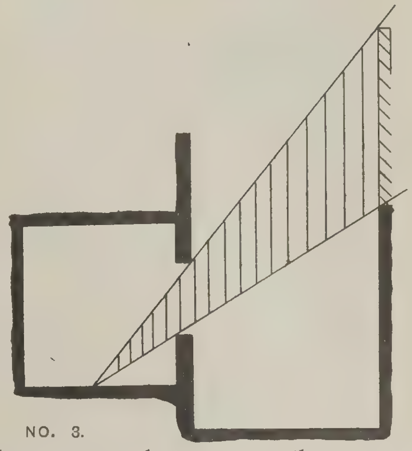
### Ancient Lights.

WORCESTER PARK.—ANCIENT LIGHTS writes: "Which is the correct way of ascertaining the amount of light lost by a building being raised in front of your house? The accompanying four sections (two of which, re-drawn, are here reproduced) show the ancient light and the wall raised in front of it."

Of the four cases submitted, No. 2 represents the maximum range of direct sunlight interrupted, and No. 3 the minimum wedge of rays subtended by the new addition. These commonly represent the cases of plaintiff and defendant, and either may well be argued. If the window face south or nearly so, case No. 2 is undoubtedly correct, as direct sunlight between A and B would be interrupted in varying degrees at different times of the day, and probably for some part of each year sunlight hitherto enjoyed would be entirely precluded. For diffused light, such as a north window enjoys, there is no measure which can properly be shown by section, for it enters by reflection at all angles. The only true test is that of an exposure meter, well-known to photographers, but to make the test a temporary hoarding must be erected in the position of the proposed obstruction, and the tests with and without hoarding must be made under similar conditions of time of day and year, and of cloud. On the whole I consider No. 2 to be the most correct representation possible on a section, but plan and aspect both need consideration. Case No. 2 also represents the rays of reflected light directly obtained from the new wall were it built of glazed brick. G. A. T. M.



NO. 2.



NO. 3.

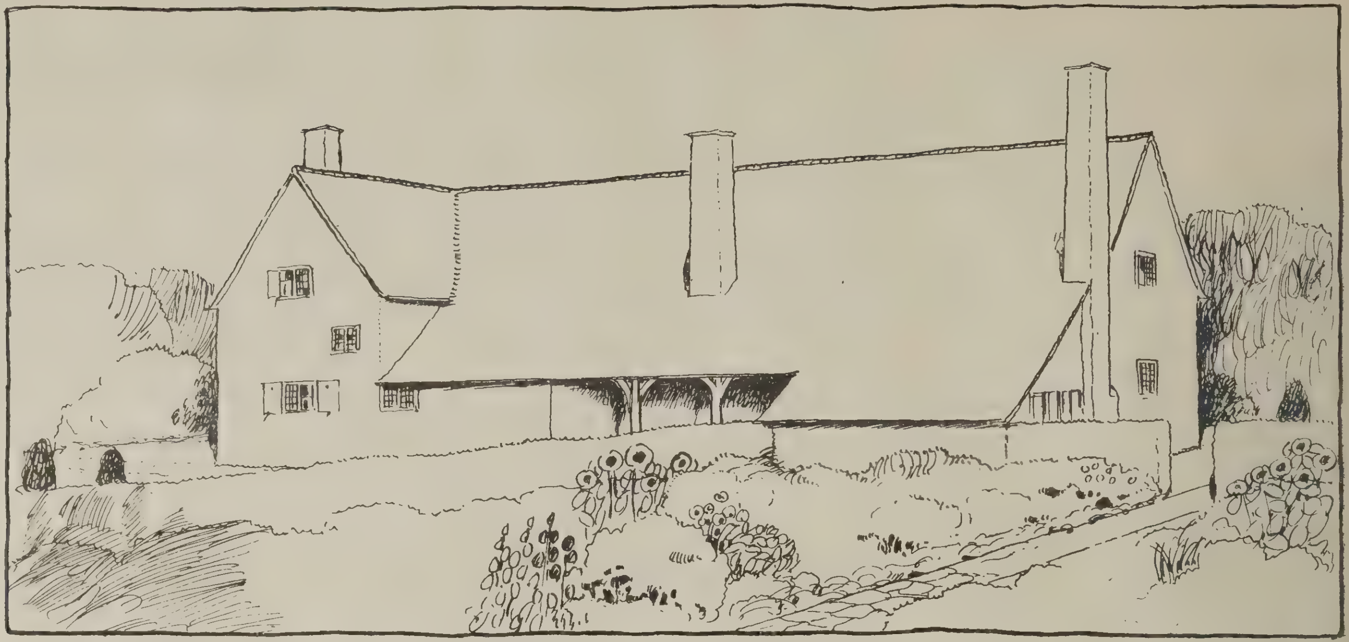
### Architects' Assistants in Canada.

DURHAM.—SURVEYOR writes: "Are there any appointments or vacancies of any kind which a young architect and surveyor might obtain out in Canada, and, if so, what steps should he take to secure them? There seems to be such competition for architects' assistantships in England that one must try abroad."

Appointments as assistants cannot be secured without going out to Canada and applying to architects there. Practice is rougher work than in this country but is excellent training for a young man. But if you find too much competition in architecture, why not try to enter a builder's office?

### S. of A. and R.I.B.A.

BRISTOL.—BEGINNER writes: "Are members of the Society of Architects thought so



DRAWINGS OF ARCHITECTURE: M. H. BAILLIE SCOTT.

Mr. Baillie Scott writes: "I am fully conscious of the slightness and sketchiness of this drawing, but it serves to emphasize my growing conviction that an architect should not spend too much time over pretty pictures or attempt to compete in any way with those to whom mere drawing is an end in itself. To him drawing must always remain a means to an end, and such perspective drawings as he can make fulfil their purpose if they help himself and his client to realize the actual appearance of a house, and for this purpose working drawings are not always sufficient. On these grounds I hope that this slight sketch may justify its existence."

highly of as those belonging to the Royal Institute of British Architects?"

The Institute is the senior society, and consequently gives most status to its members.

### Wood-Sawing Machine.

London, N.W. — M. O. writes: "What machine would be most suitable for re-sawing thin stuff at a good speed and with little waste? What power would be required to saw up to 14in. deep?"

Use a band re-saw. We understand that Messrs. A. Ransome & Co., Ltd., of Stanley Works, Newark-on-Trent, are just bringing out a new machine of this type. To saw from about 14in., at the full rate of speed the machine is capable of, would take about 6 h.p.

### Stresses in Roof-Truss.

Wolverhampton.—H. C. writes: "In the solution given to a roof-truss in your journal for October 28th the method adopted is just the reverse of that given for a roof-truss in your issue for March 18th last, namely, in drawing the funicular polygon, the enlargement at A, where forces cross before reaching the chain lines shown in the October issue; this was said to be wrong to the answer given to a querist in the March issue. Which is the correct method?"

So far as essential principles are concerned, we cannot see any difference between the two methods. The method of dealing with the lines of forces external to the truss crossing before they arrive at the funicular polygon clearly appears to be exactly the same in both problems. The mistake arises presumably from the ambiguity of the wording in the reply to the enquiry on p. 75 of our issue for March 18th last, where it is said the force "5, 6, should come on the diagram of stresses *before* 4, 5, and is not so drawn." To make this clear, for "diagram of stresses" read lines of funicular polygon, and take the word "before" to mean not in moment of time but position, *i.e.*, 5,6 *in front of* 4,5: but of course although 5.6, does come *in front*, 4,5 is drawn first: in fact, the points where the lines cut each other could not be determined otherwise. The crossing of force lines before or after meeting the funicular polygon is solely dependent upon the position of the pole; the greater the polar distance the less the "sag" of the funicular polygon.

### The Clocks of the City Churches.

London, N.W.—L. J. writes: "As is well known, the clocks of many of the City churches differ from the more usual dial on the face of the tower, in that they project over the pathway, being carried on a corbel. Are the works of these clocks in the tower?—if otherwise, I cannot understand how they are wound."

I know the clock works are always in the towers, partly for convenience of access and partly, no doubt, because the pendulum and other working parts of old-fashioned clocks could not be contained within such clock cases as project from several of Wren's churches. Doubtless there is within these cases some arrangement of wheels whereby the motive force carried along the horizontal beam is transferred to the hands. but I think it is a clockmaker's affair to describe it.

F. HERBERT MANSFORD.

## CRAYFORD CHURCH, KENT.

### An Additional Note.

By W. BRAXTON SINCLAIR.

THE additions and alterations effected simultaneously with the central arcade, or very soon afterwards, consist of the tower vestry, square-headed windows of the nave, and perhaps the rood-loft staircase. Of these, the tower and vestry exhibit mason's marks, their identity proving synchronous construction.

The tower is a good specimen of the typical fifteenth-century form which we may term Kentish, standing 53ft. from the ground, and being about 18ft. square, its simple and sturdy lines, together with somewhat massive proportions, contributing not a little to the charm of the church.

The chancel is flanked on either side by chantry chapels of Late Perpendicular date (1490), their arches differing from one another and from the arcade (beyond the shape of their singular contour) in many minor features, which are very instructive in giving clues and forming inferences as to the relative date of each. I am of opinion that the south arch is, if anything, the earlier of the two, very closely following the nave arcade in measurement and detail, although this fact does not necessarily establish proof.

When the archivolt mouldings of the arcade and chapel arches are compared, the re-entrant angle separating the two orders of mouldings is employed in the former in opposition to the hollow casement which appears in the latter, marking the earlier from the Late Perpendicular work respectively. The side arches opening from the chapel into the nave were raised in a recent restoration by the late Joseph Clarke, F.S.A., from an original low squat form precisely similar to the present chancel arch, thus unhappily aggravating this imposed defect.

The nave roofs are constructed of heavy oak trussed rafters with tie-beams spaced at intervals; the date 1630 is cut in relief on one of these, thus establishing the date when the church suffered the not infrequent catastrophe of a disastrous fire, completely destroying the roofs and leaving indisputable trace by discoloration of the stone and broken arrises of the mouldings—consequent on the falling timbers—in many parts of the building, including the central arcade. The roofs then constructed in 1630 took the same form as those destroyed (that is, two span roofs over the nave), undoubtedly decided by the line produced by the tiles just above the present tile-line on the east face of the tower.

Emphatically this church is well worth a visit, both for its uniqueness and the opportunities it affords in the study of church evolution. The foregoing is only a sketch of its main characteristics, and those who desire to continue the subject in the fullest detail should peruse the before-mentioned paper in the Archæologia Cantiana, by the Rev. G. M. Livett, F.S.A., who identified both the window triplet and west wall Norman flintwork, and has done yeoman service in solving the many difficult problems presented. In conclusion, I wish to acknowledge my indebtedness to the Rev. J. P. Alcock, M.A., the present rector, for the many facilities he has afforded me.

[The article to which the above notes are supplementary appeared in The Builders' Journal for October 21st.]

# BUILDERS' OFFICE WORK.—III.

**By W. H. C. E.**

*(Concluded from p. 176, No. 455.)*

BOOK-KEEPING—which is a weak point with small builders—ranges itself into two similar, yet dissimilar, *systems*, and the legions of *methods* in vogue (special adaptations to special requirements) are based either upon the one or the other, or a blending of both. “Single entry,” that most commonly employed, is essentially the system of the retailer and the tradesman in a small way of business. In any method of account-keeping there is one main book—whatever its form — which is commonly termed a Ledger, and this book contains, or should contain, a synopsis of the financial transactions of the firm (all business being conducted on a basis of money). In its simplest form it consists of a book ruled with a double set of money columns, that on the left hand known as the “debtor” (usually written Dr.) and the right-hand one as the “creditor” (Cr.). In “single entry” each item is entered *once* in the Ledger, *i.e.*, to the debtor *or* creditor side of some one account. In “double entry” each item is entered *twice* – *i.e*, to the debtor side of some one account *and* to the creditor side of some other account. Therein lies the great difference between the two systems. The “single entry” system provides, with care, a simple method of account-keeping together with a reasonable amount of accuracy; but as its entries do not prove themselves it provides no means of automatically checking errors such as “double entry” does. In the latter, as the totals of each of the sides should agree at all times, the taking out of a Trial Balance will reveal, in any inequality of totals, the presence of one or more errors. “Double entry,” then, is undoubtedly the best system where the results of perfect accuracy will justify the expense, which in clerical labour is practically double that of its simpler prototype.

The Ledger will take practically the same form for any system or method, and the following example will serve as a type of an account appearing in such book :—

Example of Ledger.

Dr. Brown, Jones & Robinson. Cr.

| Date. | Particulars. | Folio. | £ s. d. | Date. | Particulars. | Folio. | £ s. d. |
|---|---|---|---|---|---|---|---|
| 1902. | | | | 1902. | | | |
| June 6 | To contract | 24 | 185 0 0 | May 10 | By cash on a/c - | 62 | 75 0 0 |
| | „ extras - | „ | 13 7 6 | 31 | „ ditto - | 84 | 75 0 0 |
| 13 | „ jobbing - | 49 | 1 3 9 | June 30 | „ balance - | c/d | 50 5 9 |
| 20 | „ ditto - | 64 | 14 6 | | | | |
| | | | 200 5 9 | | | | 200 5 9 |
| July 1 | To balance - | b/d | 50 5 9 | July 10 | By cash on a/c - | 90 | 35 0 0 |
| | | | | 31 | „ balance - | c/d | 15 5 9 |
| | | | 50 5 9 | | | | 50 5 9 |
| Aug. 1 | To balance - | b/d | 15 5 9 | Aug. 31 | By balance - | c/d | 15 5 9 |
| Sept. 1 | To balance - | b/d | 15 5 9 | Sept. 5 | By cash - - | 112 | 15 0 0 |
| | | | | | „ allowance - | „ | 5 9 |
| | | | 15 5 9 | | | | 15 5 9 |

In entering up the particulars it is as well, in order to facilitate reference, to indicate briefly the nature of the work to which the entry refers, so that the items “jobbing” in the example might be replaced with “roof repairs,” “plumbing” or similar descriptions. Though it is usual to commence or “open” a Ledger account by a debit (or debtor) entry, the example will furnish an instance where it is opened by a credit (or creditor) entry, unless, as is often done—though the practice is to be condemned—a debit entry for the amount of the contract is made as soon as the contract is signed. No entry should appear in any of the books until such entry is justified, and no justification can be shown for such a debit entry until the work is actually completed.

It is strict accountancy to rule off an account each time a statement is rendered, as shown, carrying the balance forward; but for commercial purposes this is usually omitted when there are figures on one side of the account only. Two forms of “ruling off” are shown in the example; the first is the one recommended, as by it the closed portion of the account is more clearly shut off from that which is open than is the case when the (usual) short, double, ruling-off lines are employed, as in the latter part of the example. It should be insisted upon that all postings to the Ledger—and these should always come from some subsidiary book — are “direct” ones, that is, that the figures which appear in the Ledger shall be the figures actually transferred; thus, taking the first debit entry, if the entry in the book from which it is drawn shows contract amount and extras as one total, the total and not the detail figures should appear in the Ledger similarly, with the last items on the credit side, the cash and allowance, which, as they appear as separate items in the Cash Book, should be separately posted, and not grouped in one entry as “cash and allowance,” as is not infrequently done. The necessity for emphasizing this point would be at once apparent upon proceeding to check a set of books in which the matter had been neglected.

Example of Journal.

| 1902. | | | Dr. | Cr. |
|---|---|---|---|---|
| Dec. 4 | Goods a/c<br>to — Brown<br>for goods supplied by him | Dr. | 4 6 2 | 4 6 2 |
| 6 | — Robinson<br>to Goods a/c<br>for goods supplied to him | Dr. | 6 2 4 | 6 2 4 |
| 8 | Cash a/c<br>to — Jones<br>for cash paid by him | Dr. | 2 4 6 | 2 4 6 |
| | | | 12 13 0 | 12 13 0 |

Working downward from the Ledger to the subsidiary books, from which all ledger items are posted, we come upon a parting of the ways according to the system employed, and it may be well if, in order to make the matter clear, we drop into the simplest form of theoretical book-keeping. In “single entry” there will be required (1) a Bought Book for making entries of goods purchased, (2) a Sales Book for making entries of goods sold (or work done), and (3) a Cash Book for recording receipt and payment of money. Given these, we are furnished with a complete theoretical system, for obviously all simple trading transactions can be recorded in one or other of these three books, and each transaction would be duly recorded in the Ledger. “Double entry” may be worked with only one book in addition to the Ledger, and in fact *must be* so worked, though in actual practice this one book—the Journal—is split up into several Journals. The Bought Book must now become a Bought Journal, the Sales Book a Sales Journal and the Cash Book a Cash Journal, and these sectional Journals have to be flanked by a General Journal by means of which all items which cannot otherwise be dealt with are prepared for posting to their proper Ledger accounts. Whilst in “single entry” it is not imperative (though highly desirable) that Ledger items shall be postings from other books, in “double entry” it is imperative in the highest degree that every Ledger entry shall be a posting from a Journal.

As before stated, “double entry” requires that each business transaction shall be recorded twice in the Ledger – to the debit of one account and the credit of another: thus, if we buy goods of Brown we must debit some account, which we will term Goods Account, and credit Brown; and if we sell goods to Robinson, that individual must be debited and Goods Account credited; and if Jones pays cash, Cash Account must take the debit whilst Jones takes the credit. At the top of this page is an example of such Journal entries, and whilst they are shown in the simplest form they are entirely typical of the most complex entry that can be made.

Journalizing is the *pons asinorum* of most clerical graduates, and even old hands have at times to put on their thinking cap when formulating an entry, but once the principle is grasped the making of any entry merely becomes a matter for settlement of detail rather than of plan of procedure, which should always be the same as shown above. Every Journal entry should have attached to it the why and the wherefore of the making of the entry as shown, this description being termed the “narration.” Some difficulty has been experienced by the writer when teaching journalizing owing to the failure of students to realize who of two parties to a transaction takes the debit and who the credit, and for the benefit of the younger readers of this journal we will try to make the point quite clear. Brown and Jones are two parties to a transaction, Brown selling some bricks to Jones. Jones gains the bricks; Brown loses them: therefore Jones is debtor and Brown is creditor. When Jones pays for the bricks a second transaction occurs. Brown gains the cash; Jones loses it: therefore Brown is debtor and Jones is creditor. If the rule is remembered that the gainer takes the debit and the loser the credit the position of the parties to a transaction should not long be the subject of doubt. "But," says the uninformed, "surely if a man sells goods to another he is gainer rather than loser by reason of the profit he will make on the transaction." Precisely, if we look at the trading results, which we must *not* do. It is only the account-keeping results with which we are concerned, and ultimate profits may be left to take care of themselves. We have to deal simply with bare facts as we find them, and behind those bare facts we have no business to go.

But though book-keeping by simple Journal and Ledger alone will satisfy the requirements of the Society of Arts' examiners in that subject (the examination being for theoretical knowledge only), such a course would not find much favour in ordinary business establishments by reason of the multitudinous entries that it would involve; hence for commercial purposes a number of sectional Journals have to be employed. In order to show the difference between single and double entry practically applied to builders' account-keeping, examples are here given showing how the same items of purchases and sales are dealt with under the two systems. Let it be assumed that we are dealing with a few invoices of goods supplied.

Example of Invoice Book—"Single Entry" System.
December, 1902.

| Date. | Name. | Details. | Folio. | £ | s. | d. | Appropriation. | Folio. | £ | s. | d. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 5 | — Brown - | 5,000 bricks - | 79 | 7 | 10 | 0 | No. 1 contract - | P.C./28 | 2 | 10 | 0 |
| | | | | | | | No. 5 ditto - | P.C./97 | 3 | 10 | 0 |
| | | | | | | | Stock - - | — | 1 | 10 | 0 |
| 10 | — Jones - | 5 tons cement - | 64 | 7 | 5 | 0 | Stock - - | — | 7 | 5 | 0 |
| 30 | — Robinson - | Ironmongery - | 126 | 1 | 2 | 6 | No. 1 contract - | P.C./28 | | 7 | 8 |
| | | | | | | | Stock - - | — | | 14 | 10 |

Herein are entered all necessary details so as to ensure the proper credits being posted to the merchants' accounts, and proper debits to the accounts of jobs for which the materials were purchased. As no "stock accounts" are kept no posting of items appropriated to stock is necessary, though sometimes a floating account is opened for the purpose of ensuring that every item in the Invoice Book (or Bought Book) gets posted somewhere. In "double entry," whilst preserving the same form of ruling, the arrangement of items is altered so as to conform with the proper Dr. and Cr. sides of the book. Though contracts are here indicated by numbers, this course will in practice be found conducive to mistake-making; hence it will be found preferable to let each contract be known by its name.

Example of Invoice Journal—"Double Entry" system.
Dr. December, 1902. Cr.

| Date | Details. | Appropriation. | Folio. | £ | s. | d. | Personal. | Folio. | £ | s. | d. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 5 | 5,000 bricks - | No. 1 contract - | P.C./28 | 2 | 10 | 0 | | | | | |
| | | No. 5 ditto - | P.C./97 | 3 | 10 | 0 | | | | | |
| | | Brick a/c - | L/81 | 1 | 10 | 0 | — Brown - | B L./79 | 7 | 10 | 0 |
| 10 | 5 tons cement | Cement a/c - | L/96 | 7 | 5 | 0 | — Jones - - | B L./24 | 7 | 5 | 0 |
| 30 | Ironmongery | No. 1 contract - | P.C./28 | | 7 | 8 | | | | | |
| | | Ironmongery a/c - | L/46 | | 14 | 10 | — Robinson - | B.L./126 | 1 | 2 | 6 |
| | | | | 15 | 17 | 6 | | | 15 | 17 | 6 |

Here as will be seen every item has to be dealt with by posting to some account, and the example provides for three "stock accounts," which, in practice, may be many or few according to the exigencies of business requirements. At the bottom of each page the cash columns should be cast and made to agree, as otherwise there might be an error in the books which the Trial Balance would expose though it would not locate. It will readily be seen how this Journal conforms in principle to the simple general form previously exampled. Taking the second item, we find that we have the exact counterpart of a simple Journal entry, thus:—

| | | | | | | |
|---|---|---|---|---|---|---|
| Cement a/c Dr. | 7 | 5 | 0 | | | |
| to—Jones | | | | 7 | 5 | 0 |

In issuing goods from stores a simple memorandum book will suffice for "single entry" purposes, as the items need not be priced until they are entered in either the Day Book or Prime-cost Book; but in "double entry" a proper Materials Journal will be necessary, and in order to avoid a multiplicity of *contra* postings it is usual to have a separate journal for each of the principal "stock accounts"; and as one of the chief uses of the "double entry" system is to check "leakages," the items in the journals should be priced out on the basis of prime cost plus a certain addition to cover cost of handling. There is no necessity for exampling a "single entry" book for stores issued, but an arrangement of a general Stores Journal adapted for "double entry" is given above.

Example of Stores Journal—"Double Entry" system.
Dr. December, 1902. Cr.

| Date. | Ticket No. | Description. | Appropriation. | Folio. | £ | s. | d. | Contra. | Folio | £ | s. | d. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6 | 426 | 250 bricks - | No 1 contract - | P.C./28 | | 8 | 9 | Brick a/c - | L/81 | | 8 | 9 |
| | | 6 bags cement - | " - | " | | 17 | 6 | Cement a/c - | L/96 | | 17 | 6 |
| | | 28 lbs. cut nails | " - | " | | 2 | 11 | | | | | |
| | 427 | 14 lbs. do. | No. 5 contract - | P.C./97 | | 1 | 6 | Ironmongery a/c | L/46 | | 4 | 5 |

It should hardly be necessary to insist that a correct prime cost should be kept of every contract undertaken, yet the builder in a small way of business frequently neglects to do so, deeming the result not worth the trouble, seeing that the financial result to him will not be one whit altered whether or not he knows what the actual cost has been. A book ruled as exampled in the simple Journal will suffice for simple cost-keeping, using one column for wages and the other for materials. In "single entry" the prices would be calculated from the entries made, whilst in "double entry" the prices would be postings from the various Journals.

The Day Book for entries of jobbing work may take the same "Journal" form as regards ruling, the first column being used for detail figures, and the second for the extension of the total, which will be posted to the Ledger. This form of Day Book is, in the writer's opinion, far preferable to the sub-Ledger form which is frequently recommended. With the former the pages can be cleared outright, and the state of any customer's account can be seen by a glance at the main Ledger, whereas, by the latter, the whole book has to be waded through at every period of making up the accounts, and until such accounts are made up no item of indebtedness makes its appearance in the customers' ledger accounts.

The example given at the top of the next page illustrates a good form of Jobbing Journal which is applicable to either the "day book" or "ledger" style of keeping these accounts. It is intended to occupy opposite pages of the book, the left-hand side being memoranda only for convenience of making out the account; the right-hand side forms the Journal proper, the entry being balanced by a transfer to the Ledger. The profit must be added by a General Journal entry debiting the account and crediting Profit and Loss account.

With the few "double entry" specimen entries here given we will now proceed to prove the Ledger by a Trial Balance. The Ledger totals must be assumed, as there is not space to example them, but the figures are easily arrived at by a little arithmetic:—

| | Dr. | | | Cr. | | |
|---|---|---|---|---|---|---|
| No. 1 contract - - | 4 | 6 | 10 | | | |
| No. 5 do. - - | 3 | 11 | 6 | | | |
| Brick a/c - - | 1 | 10 | 0 | | 8 | 9 |
| Cement a/c - - | 7 | 5 | 0 | | 17 | 6 |
| Ironmongery a/c - | | 15 | 11 | | 9 | 1 |
| Wages a/c - - | | | | | 15 | $4\frac{1}{2}$ |
| Profit and Loss a/c - | | | | | 4 | $9\frac{1}{2}$ |
| — Brown - - | | | | 7 | 10 | 0 |
| — Jones - - - | | | | 7 | 5 | 0 |
| — Robinson - - | | | | 1 | 2 | 6 |
| Smith & Co. - - | 1 | 3 | 9 | | | |
| | 18 | 13 | 0 | 18 | 13 | 0 |

It will be seen that the totals agree, hence we may conclude that the books are correct, though there is one class of posting error

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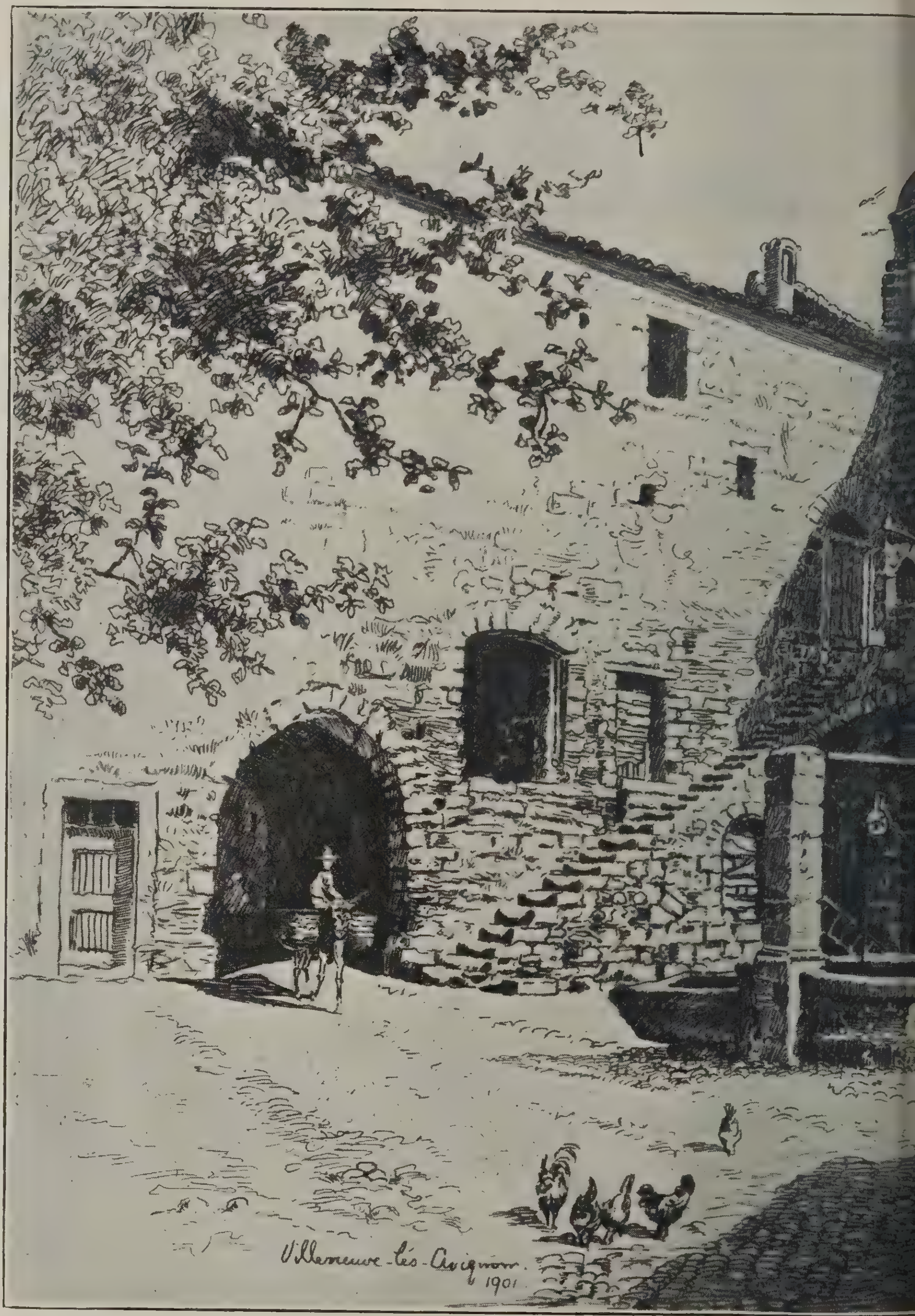
*Supplement to*
THE BUILDERS' JOURNAL AND ARCHITECTURAL RECORD,
*Wednesday, December 2nd,* 1903.



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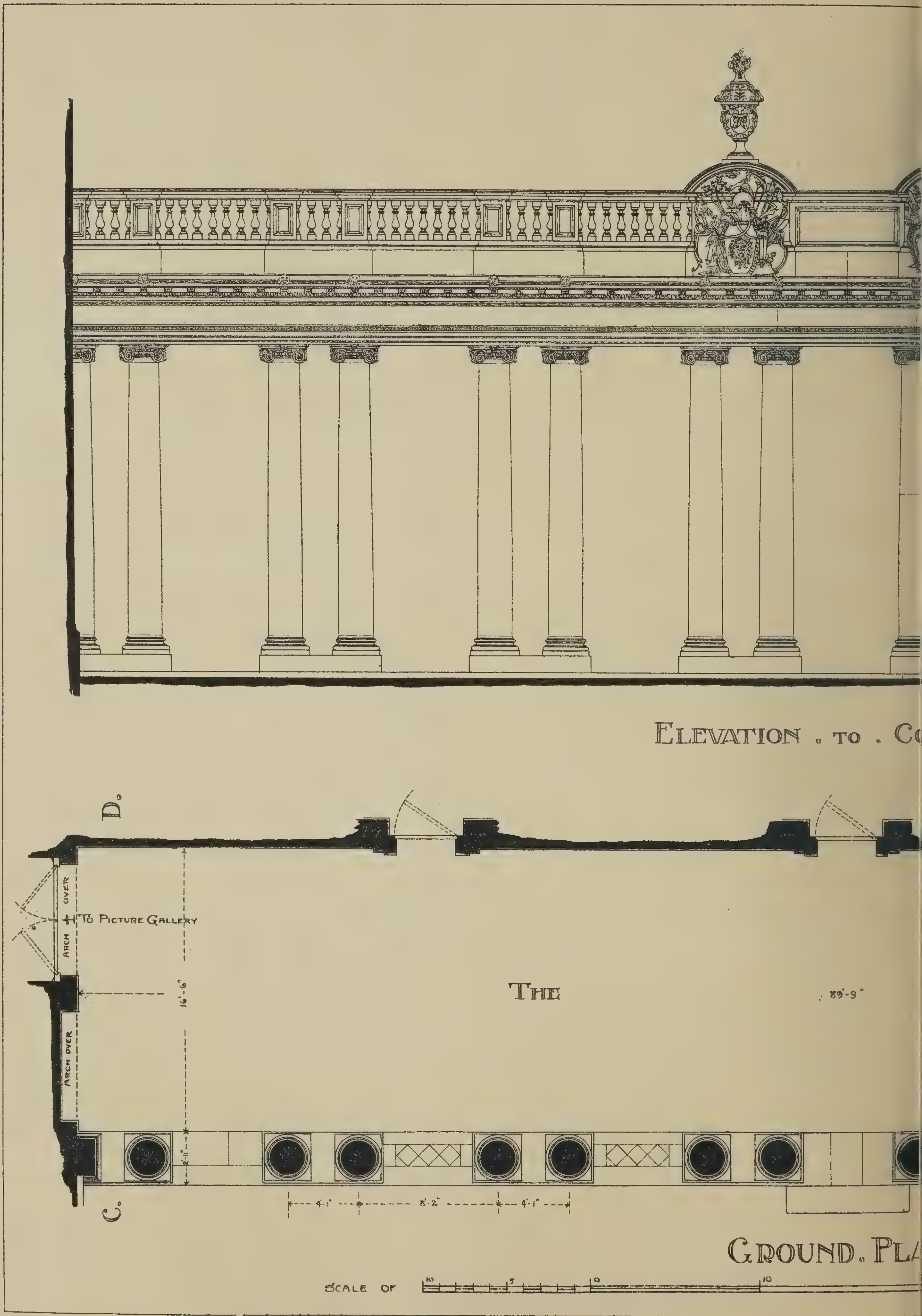

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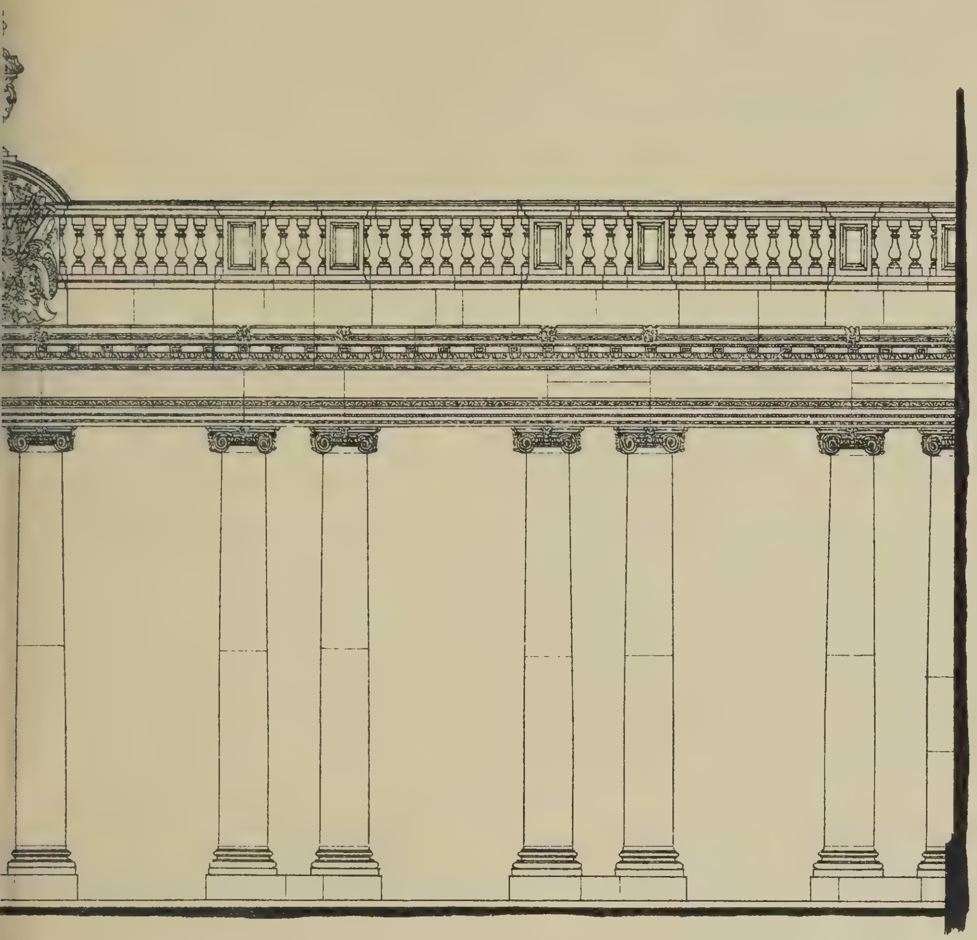

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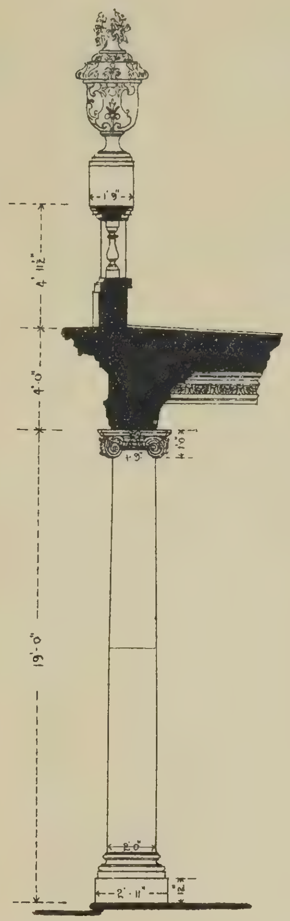

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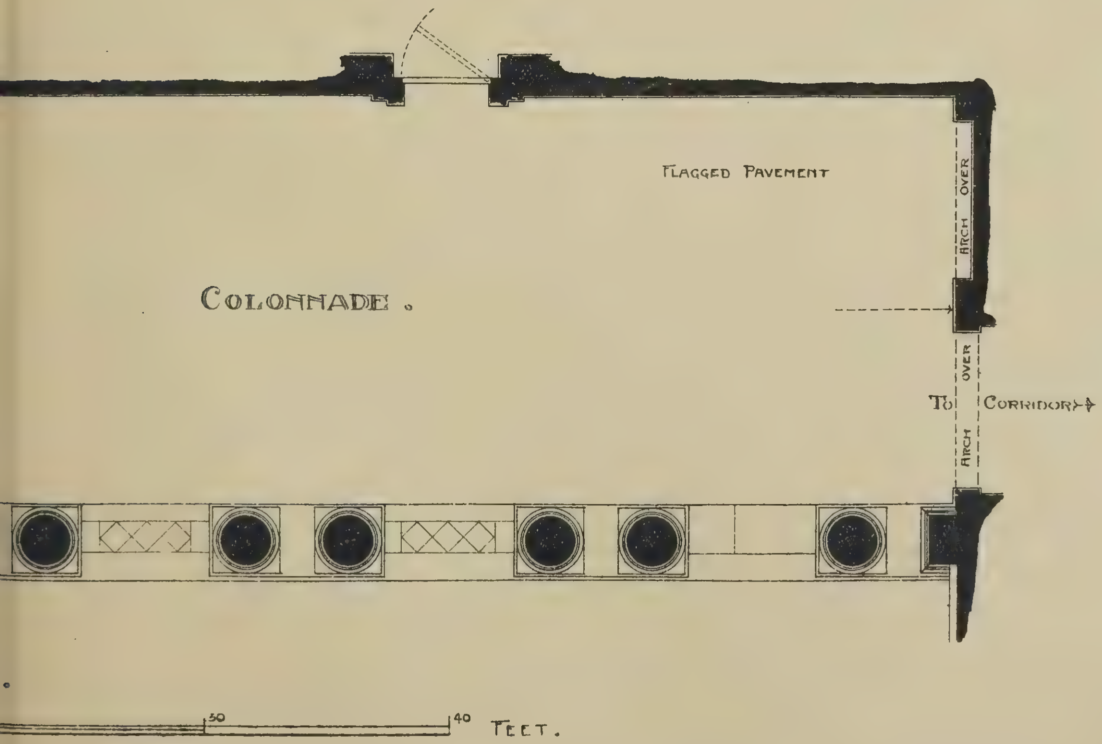

SIR CHRISTOPHER WREN, ARCHITECT.

C. R. THICKPENNY.

"PHOTO-LITHO." R. J. EVERETT & SONS, 56 LUDGATE HILL, LONDON, E.C.

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Example of "Jobbing Journal"— "Double Entry" System.

Week ending Dec. 13, 1902.

| Dr. | | £ | s. | d. | | | | £ | s. | d. | | Cr. | | £ | s. | d. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Dec. 8 to Dec. 11. | Smith & Co.— Cleaning out eaves-gutters and down-pipes to warehouse and outbuildings, taking out broken parts and replacing with new. Plumber and Labourer 12 hours each, 1 length 3½in. half-round eaves-gutter, 1 length 3in. stack pipe, red lead, &c. | | | | 13 | Plumber 12 - | T.B. / 69 | | 10 | 6 | 11 | 1·6ft. 3½in. H.R. gutter | S.J. / 76 | | 1 | 1 |
| | | | | | | Labourer 13 - | ” | | 4 | 10½ | | | | | | |
| | | | | | 9 | 2·6ft. 3½in. - H.R. gutter - | S.J. / 74 | | 2 | 2 | | To debits | | | 1 | 1 |
| | | | | | | 1·6ft. 3½in. - S pipe - | ” | | 2 | 0 | | | | | | |
| | | | | | | 2lbs. red lead | ” | | | 6 | | | | | | |
| | | | | | | | | 1 | 0 | 0½ | | | | | | |
| | | | | | | Credits - | | | 1 | 1 | | | | | | |
| | | | | | | | | | 18 | 11½ | | | | | | |
| | | | | | | Profit 25 % | J / 69 | | 4 | 9½ | | | | | | |
| | | 1 | 3 | 9 | | | | 1 | 3 | 9 | | By Smith & Co. - | L / 47 | 1 | 3 | 9 |

which a Trial Balance will not reveal, *i.e.*, (say) a debit entry which, belonging to Jones, had been posted by mistake to the account of Robinson. This would be found out in due course by the repudiation by Robinson of the item. Any similar wrong posting on the credit side should be revealed when comparing the merchant's "statement" with the Ledger account. If when taking stock the value of that on hand should be found to seriously vary from the balance of the "stock account" or accounts, it would indicate something amiss and something needing investigation. With "single entry" no such indication would be possible, and larceny by employees might go on unnoticed for a long time.

Though space is exhausted the subject by no means is; but if what has been written is examined in conjunction with some good manual of theoretical book-keeping ("Book-keeping made easy," by Greenwood, can be recommended) it will serve to amplify theory and extend it into the region of the workaday requirements of the builder in a small or moderate way of business. Any point which may be obscure to the reader can be elucidated through the "enquiry" columns.

## Builders' Notes.

**The New Schools, Acton Green,** are being warmed and ventilated by means of Shorland's patent Manchester grates, supplied by Messrs. E. H. Shorland and Brother, of Manchester.

**Reading and District Building Trades Masters' Association.**—At the fourth annual dinner held recently (the president, Mr. McCarthy E. Fitt, presiding) Mr. James Catley said that they could not survey their trade in Reading just now with any complacency; in comparison with the trade in years past it was decidedly unfavourable; confidence was required.

**London County Council.**—At last week's meeting a tender for £17,884 was accepted for the erection of Vallette Buildings, Jerusalem Square, Hackney. The architect's estimate was £18,978. The Highways Committee recommended that the Works Department should carry out the car-sheds for the New Cross and Greenwich trams at the architect's estimate of £80,530. Mr. Goodrich moved that the recommendation be referred back to the Committee with a view to the work being put out to public tender. He thought it unwise that so much work should be just handed over to the department without any competition. On a division the amendment was rejected and the Committee's recommendation adopted.

**The Business of Messrs. Arthur L. Gibson & Co.,** originally started for the manufacture and sale of the B. & S. patent folding gates, has increased to such an extent, and other productions introduced by the firm now form so large a proportion of their business, that "The B. & S. Folding Gate Co." has become a misnomer and the cause of misunderstanding. In the future, therefore, the business will be conducted under the personal name of Arthur L. Gibson & Co., 19, 20 and 21, Tower Street, Upper St. Martin's Lane, London, W.C.

**The Stanway Viaduct Collapse.**—The jury returned the following verdict in connection with the collapse of a portion of the viaduct being built at Stanway on the new Cheltenham and Honeybourne branch of the G.W.R., which resulted in the deaths of four men (Messrs. Scott and Middleton, Ltd., were the contractors):—Accidental death. Riders: (1) Considering the state of the weather sufficient time was not given for the lime mortar to set before the centres were removed; (2) arches of this kind, in the winter months especially, should be set in cement-mortar; (3) the steam crane was carried further on to the centre of No. 10 arch than was advisable, having regard to the fact that the supports of the crane roadway did not extend to the next pier. (The arches were of the ordinary kind, built of brickwork.)

**British Glass Mosaic.**—At the International Exhibition of Inventions now open at Brighton Aquarium Messrs. Diespeker, Ltd., of 57–60, Holborn Viaduct, have an interesting exhibit of mosaic work. This includes the firm's patent mosaic, consisting of marble fragments mixed with cement and coated over a basis of concrete, the facing being about ⅝in. thick, rubbed down smooth. Messrs. Diespeker have carried out a very large amount of this work in important buildings throughout the country; it has been extensively used for stairs, and the firm is now introducing a patent "inlet" step formed with it, having two grooves on the tread filled with rubber or other suitable material to give a good foothold. The chief feature, however, of their exhibit at Brighton is the patent British Glass Mosaic they are now introducing. This consists of a painting on canvas entirely covered with pieces of white glass about ½in. square. Messrs. Diespeker hope by this invention to obviate the use of Venetian glass mosaic which, as is generally known, has been used for centuries in the ornamentation of churches and public buildings abroad, whilst of more recent years it has been employed to a smaller extent in England. It is costly, however, for the reason that all tints have to be matched in small glass tesseræ before the pattern can be made. These tesseræ are made in Murano. In their British Glass Mosaic the patentees follow quite a different method, which reduces the cost (especially where figures enter into the composition) by 60 per cent. It is applicable to the outside as well as the inside of buildings, and can also be adopted in the manufacture of letters for advertising purposes and for shop fronts Some effective gilt mosaic on this system is shown at the exhibition. Messrs. Diespeker have a large staff of designers, and are in a position to prepare schemes of decoration suitable for every class of building, and they will be glad to prepare designs and estimates free of charge to prospective users.

**The City and Guilds of London Institute** has just issued its report on the work of the department of technology for the session 1902–3, a bulky volume of more than 450 pages. Such full reports are of the greatest use; this one contains not only particulars of the work done in each class, scholarships, &c., but the annual examination papers in each subject. The reports of the examiners are for the most part plaintive—the students' papers are found to be poor in quality, and display an inordinate carelessness and misunderstanding in the reading of questions; but the reports of the great improvement in the practical work done show that the students really improve under instruction and that the examination test is not a good one. That is always the way with schoolmen: they think everything is wrong but the examination system. The book is published by Mr. John Murray, of Albemarle Street, W., price 1s. post free, or 9d. nett.

**Building Education in Germany.**—Education in the building trades in Germany is the subject of the latest [Diplomatic and Consular Reports, Miscellaneous Series, No. 600] of the reports of Dr. Frederick Rose, our Consul at Stuttgart. The Baugewerkschulen were originally established for the building trades alone; other courses of instruction were added in time, such as mechanical, electrical and hydraulic engineering, surveying, &c.—these various branches of secondary technical instruction being combined partly from economy and partly because the preliminary instruction is much the same for all. Sometimes they are State schools, sometimes provincial or municipal. In Prussia nineteen out of twenty-two are State schools; most of them are independent of other institutions, while in some cases they are branches of larger schools. The report gives a list of fifty-two of these building and engineering trades' schools, and selects three outside Prussia—Stuttgart, Karlsruhe and Nüremberg—for the purpose of illustrating the organization, equipment and training. A full account of the Stuttgart school was published in THE BUILDERS' JOURNAL for October 9th, 1901.

# Keystones.

**At the King's Sanatorium, Midhurst,** a chapel is to be erected at a cost of £20,000 – the gift of Mr. John Brickwood, a well-known brewer.

**Westminster Cathedral.**—In the centre of the sanctuary the great altar stone, a solid block of Aberdeen granite, has been put in place. The throne presented by the bishops of England, a beautiful piece of work entirely in marble, is completed, and the marble font has been fixed, its great basin being large enough for baptism by immersion.

**An Exhibition of Architectural Drawings** by students of the architectural section of the Edinburgh School of Art was opened last week at the Royal Scottish Academy National Galleries. There are about eighty students in the architectural section, two of whom are engaged every year to go about measuring old buildings of interest.

**Skyline.**—Speaking recently at the presentation of prizes to students of the Glasgow School of Art Club, the Lord Provost said that the habitual tenement building in Glasgow presented nothing but a dull, straight gutter-line as its whole sky effect. He had often urged that by a little additional expense the line could be varied so that the citizen without any inherent knowledge of art would note the fine effect.

**Bristol Society of Architects.**—At the opening of the session on Monday of last week the president (Mr. Joseph Wood, F.R.I.B.A.) entertained the members of the Council at dinner, after which a smoking "At Home" was held at the Fine Arts Academy, Clifton. There was a very large gathering of members and architectural assistants and pupils, who inspected with the greatest interest a large collection of admirably-executed sketches and measured drawings, the work of the president and his late partner, Mr. Foster; many of the sketches dated from the early "forties," and illustrated parts of old Bristol which have now disappeared.

**The First Ingram House,** a residential club for clerks and young men in business, is now being built on a spacious site at Stockwell, London, S.W. There are to be four floors of bedrooms, a suite of club rooms on the ground floor, and a large basement containing other club rooms as well as the necessary service of the building. Accommodation will be provided for 208 residents, each of whom will have a separate room, not less than 7ft. by 10ft., and the use of the club rooms in common. The rent, which will also include service, will range from 7s. to 12s. a week per bedroom, and it is intended that the actual cost of living to the residents shall be reduced to a minimum. The estimated cost of the building, including furnishing, is £36,000, and it is hoped that it will be completed by May, 1905. Mr. A. T. Bolton, of Westminster, is the architect, and Messrs. Rudd & Son, of Grantham, are the contractors.

**Edinburgh Architectural Association.**—At a meeting held last Wednesday a paper was read by Mr. David M. Nesbit, Leicester, on "Warming and Ventilation." He said that not less than 1,800 to 2,000 cub. ft. of air per hour should be provided for each child in public schools. Having spoken of the plenum and exhaust systems, Mr. Nesbit referred to an invention of his own, the "Unplenumette," the novel feature of which was a recess built in the wall above the floor line, with the heating surface fixed within. The whole of the apparatus was out of the reach of the occupants, and yet gave ready access for adjustment of heat and ventilation. It was readily accessible for repairs, could be kept scrupulously clean, and might be regarded as strictly hygienic. He strongly advocated the plenum system for public buildings.

**The Ancient Church of St. John's, Leeds,** built in 1631–3, the finest ecclesiastical building of the city, was recently reopened after restoration at a cost of £1,500.

**A New Town Hall for Holborn** is proposed to be built on High Holborn at an estimated cost of between £80,000 and £100,000. The old town hall is proposed to be sold.

**A new Entrance to Bushy Park** is being constructed near the Hampton Court barracks by the west side of the Royal green opposite the Trophy Gates entrance to the Palace.

**Housing at Liverpool.**—The German Emperor has asked for plans of the new municipal dwellings for the poor, the foundation-stone of which was recently laid by Princess Louise. These the Corporation is having prepared.

**The new Leeds Dispensary** is nearing completion. The architects are Messrs. Bedford & Kitson. To relieve the front elevations figures have been executed by Mr. H. C. Fehr. The site has cost £10,000, and the building will cost another £18,000. Small Accrington brick has been used in the buildings, with dressings of Portland stone.

**National Memorial to Queen Victoria.**—It is suggested that the painted stone front of Buckingham Palace should be scraped. This front was added by Edward Blore after the accession of Queen Victoria; it converted the building into a quadrangle, the cost being £150,000. The rest of the palace was built from Nash's designs.

**The Tower of Babel.**—An eminent K.C., who was cross-examining an architect of repute, began: "You are a builder, I believe?" "Pardon me, I am an architect" "Pretty much the same thing, isn't it?" "Not at all" "But there was no architect for the Tower of Babel!" "No," responded the witness, "hence the confusion."—(Mr. Butler Wilson in his presidential address to the Leeds and Yorkshire Architectural Society.)

**Egypt Exploration Fund.**—The total expenditure during the past year was £2,895, as against £3,378 during the previous year. The total receipts were £2,736, as against £3,048 for 1901-02. The archæological survey spent £515, its receipts having been £647, and the total expenditure on the Græco-Roman branch was £1,155, as compared with £647 last year, while the receipts had only been £900.

**The View from Richmond Hill.**—The agreement now sealed between the London County Council and Sir J. Whittaker Ellis for the preservation of the view from Richmond Hill provides that no buildings, except conservatories or other buildings of that nature for garden purposes, are to be erected between the Thames and a certain line on the plan; that no dwelling-house may be erected above that line; that no other building (except those now existing) shall be allowed between that and another line, known as line B; and that no manufacturing building or chimney shaft shall at any time be erected on the land above the line B.

**Sheffield Society of Architects and Surveyors.**—At last Thursday's meeting Mr. J. R. Wigfull, A.R.I.B.A., read a paper on "A Short Tour in Warwickshire and Gloucestershire." He drew attention to Ford's Hospital, a fine half-timbered building at Coventry, erected in 1529, and still used as almshouses. The castle and old buildings in Warwick were also described, together with St. Mary's Church, which contains the celebrated Beauchamp Chapel. The contracts relating to the erection of the latter are in existence, and show the business-like manner in which building operations were conducted in the fifteenth century. Stratford-on-Avon and Warwick were next described, after which the lecturer passed in review a number of old Cotswold villages with their simple stone houses; and then to Tewkesbury, with its abbey church.

**A New Tower to Beckenham Parish Church** has been erected.

**The Parish Church at Olney,** in Buckinghamshire, is to undergo restoration at an estimated cost of £1,300.

**A new Pier at Broadstairs** is proposed to be constructed between Victoria Gardens and the Grand Hotel, on the roadway known as Louisa Gap, extending seaward for 1,300ft.

**Mr. George William Briggs,** of Ashton, died recently at the age of forty-seven years. He was a monumental rock builder and mason. His father laid out the grounds at the Crystal Palace, London.

**Ayr Hospital Competition.**—In our notice of the awards made in connection with this competition it should have been stated that the second premiated design was sent in under the title of Newion, Cheatle and Vernon Cale, not Newton & Cheatle.

**An Exhibition of Ancient Art at Siena** is to be held next year on the lines of that held last year at Bruges. It will include all the artistic handicrafts as well as the fine arts, and the committee propose also to revive various old local festivals, of which the tradition can still be traced.

**The Perceval Memorial Church (All Saints') at Ealing** is now being erected at an estimated cost of £13,000. The architect is Mr. W. A. Pite, F.R.I.B.A. The material externally will be Stamford stone, with rock-faced walling in dropped courses, while internally the floor and chancel walls will be of marble, and the stalls, pulpit and screen of fumed oak.

**Bury Park Congregational Church, Luton, Beds,** was opened recently. Accommodation is provided for 533 adults or a mixed congregation of about 610 persons. The contract was let to Messrs. T. & E. Neville, of Luton, and amounted to £4,429. The architects were Messrs. George Baines, F.R.I.B.A., and R. Palmer Baines, 5, Clement's Inn, Strand, London, W.C.

**A Pianoforte Showroom.**—The well-known showrooms of Messrs. John Broadwood & Sons, Ltd., are to be removed from Great Pulteney Street, Piccadilly Circus, to larger and more modern premises in Conduit Street, Bond Street, familiar to many as Limmer's Hotel. In order to adapt the building to the purposes of pianoforte showrooms, extensive structural alterations will be made, the premises being entirely and artistically redecorated.

**The Mount Vernon Hospital for Consumption,** on Hampstead Heath, has been enlarged by the addition of a new east wing. The total accommodation is for 145 beds. The cost of the present extension is £16,000, and that of the whole building £43,500, or £300 a bed. The new hospital in connection with it at Northwood, on the borders of Middlesex and Herts, is approaching completion. When this is also opened there will be a total accommodation of 245 beds.

**A Yorkshire Sanatorium.**—The Bradford Union phthisis sanatorium at Eastby is now being completed. The administrative buildings, two storeys in height, are centrally situated at the rear of the patients' quarters, and are built of local stone. The patients' pavilion, except the central portion, over which there is a room for nurses, is only one storey high. It contains four 1-bed rooms, four 2-bed rooms, one 4-bed room, one 5-bed room and a dining-room. The other wing, when built, will have similar accommodation. Each room has a window in front opening the full width, also a large unglazed window at the back opening into a corridor that runs the length of the building. Mr. Fred Holland, engineer and architect to the Board, prepared the designs.

# Correspondence.

### "Scientific Masonry."

*To the Editor of* The Builders' Journal.

London, N.

Sir,—Allow me to point out to Mr. Wornell that one line is said to be parallel to another when it is the same distance apart at all points—perpendicular distance, of course. In the case of parallel curves this perpendicular distance is termed "normal." In the drawing of the elliptical arch published in your issue for October 28th, since the trammel is extended for the extrados curve, thus making the curves the same distance apart *measured in the direction of the trammel*, and since the trammel does not remain normal to the curves, the two ellipses cannot correctly be called parallel curves. I have in mind six totally different, and mathematically correct, methods for obtaining normals to any ellipse, four of which, at least, are capable of being easily and correctly applied in practice. The usual method—mathematically accurate—is to bisect the angle between the "focal distances" of any point to find the normal of that point. The other methods, while being equally correct and perhaps more easily applied, may not be so well known. It is of course possible to draw correct normals to all the conic sections.—Yours truly,

WALTER J. ATKINS.
(Honours Medallist in Practical Plane and Solid Geometry.)

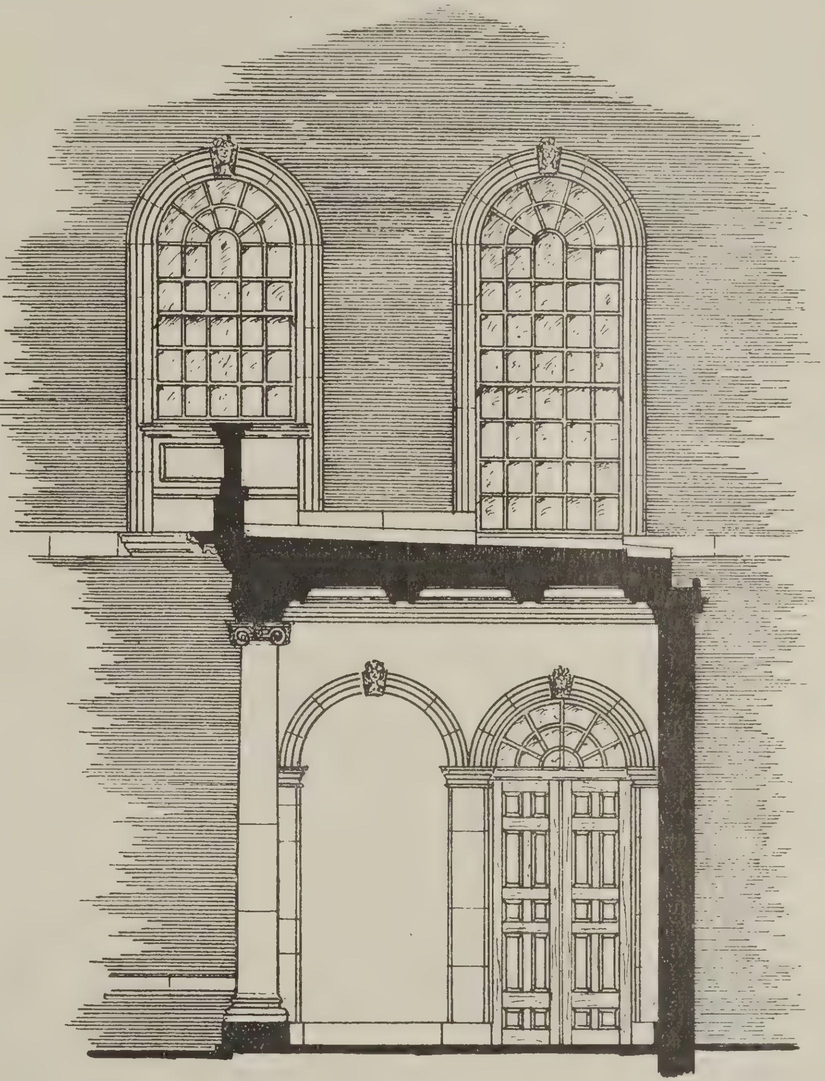
# Bricks and Mortar.

**Aphorism for the Week.**

*There is only one way of being quite sure that you will not be treated as a vandal—that is, to destroy nothing; to leave the monuments of the past just as they are.*—Ernest Renan.

**Our Plates.** Mr. Percy Wadham's drawing is referred to on p. 234.—The colonnade is the finest piece of Wren's work at Hampton Court Palace. It is exquisitely proportioned. The coupled columns, which Wren learnt from Bernini in Paris, and which he employed at Chelsea and Greenwich Hospitals, are effectively employed here. The irregular setting of the ceiling is worthy of note, and has been criticized adversely. Hampton Court Palace was originally erected by Cardinal Wolsey, who acquired the estate in 1515. In 1526 he gave the building to Henry VIII., who made several additions, including the Gothic great hall and chapel. Sir Christopher Wren was employed by William III., and he altered and rebuilt much of the old Tudor work, somewhat vandalistically. A paper on the Palace, by Mr. John Belcher, A.R.A., was published in our issues for February 9th and 16th, 1898

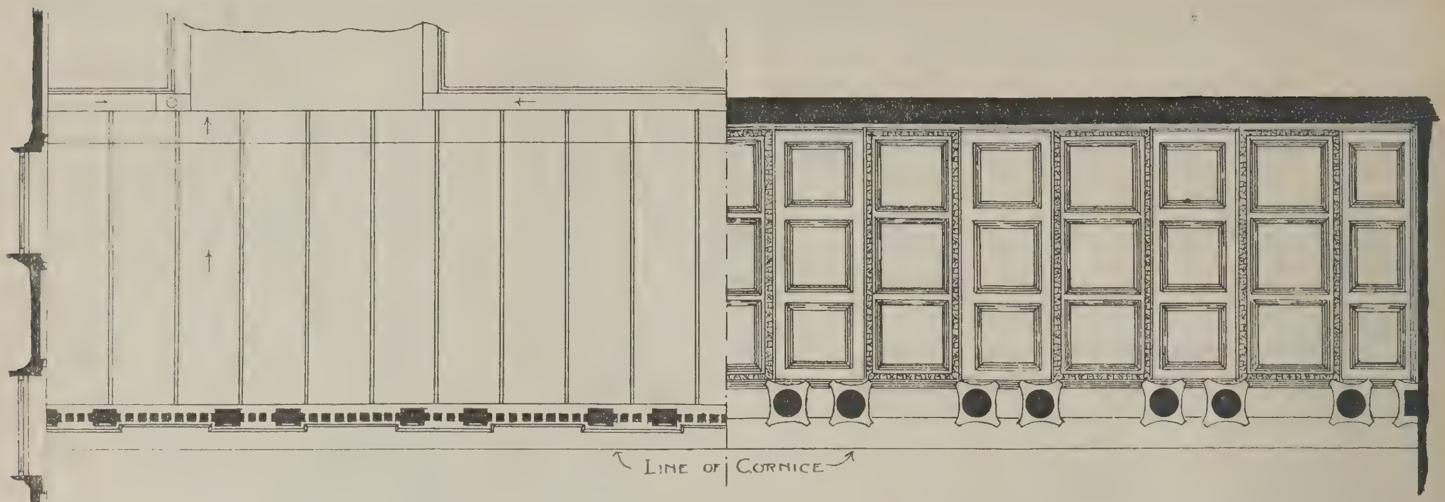
**Truro Cathedral.** In the course of a lecture on Truro Cathedral which he delivered recently at Truro, Precentor Donaldson said the three-fold aisle on the south side, and the difference in the length of the transepts, gave a great beauty to the cathedral, and took away some of that stiffness and rigid monotony which might otherwise appear. There was a certain amount of feeling in the early days that the cathedral ought to have been built entirely of Cornish granite; but people who said that did not realize the exceeding cost of it. Granite did not lend itself to rich ornamentation, the structure would have taken longer to build, and it would have required a deal of warmth of colour and ornament to make it attractive and beautiful. People had talked of the erection of the cathedral as a great waste of money. But they did not seem to realize how very much good was done, not only to the glory of God, but to a large number of workmen for a considerable number of years. Two-thirds at least of the cost of Truro Cathedral was paid for labour to those employed on the works, and a great deal of the money had gone into the pockets of Cornishmen; so if anyone said that a large amount of money had been sunk in the building, he would ask how it could be better spent than in giving honest, good, and noble employment to their fellow men? Some people complained that the cathedral was built down in the town and was surrounded by houses. Personally he preferred that it should be so. It was a great ornament, but not a mere showplace. It was the great idea of the architect that the cathedral should impress people with a spirit of devotion, and it rested to a large extent with those who lived around it and habitually worshipped there to make it really what the founder intended it to be—a centre of holy worship and of the religious life of the diocese. Last week Mr. E. T. Price, hitherto clerk of works of the cathedral, was presented with a cheque for £60 and an illuminated address by the Building Committee. Mr. Price is going to Johannesburg to supervise church building.



THE COLONNADE, HAMPTON COURT PALACE: SECTION ON C—D (CENTRE PLATE). MEASURED AND DRAWN BY C. R. THICKPENNY.

**A Paris Landmark.** The appointment of the Minister of the Colonies as the new director of the Louvre threatens the disappearance of "Depôt des Marbres" in order that a new palace for Colonial offices may be erected on the site. This depôt, situated in Rue de l'Université, is the Government storehouse for everything pertaining to sculpture. There may be found huge unworked blocks of marble, unfinished and finished effigies of emperors, kings and potentates set round as if in a cemetery. There also are kept all the works purchased by the State at the annual Salons until room is found for them in the Luxembourg or in provincial museums. In this depôt, too, there are several artists who enjoy the hospitality of the Government. In one of the studios Jean Paul Laurens works busily at his decorations for St. Etienne, and it was there he executed his ceiling for the Odéon, his fine "Hommage à Colbert" and his triptych of Jeanne d'Arc. Louis Béroud, the painter, and Guillaume, the sculptor, director of the Academy of France in Rome, and Rodin, are likewise guests of the State. Many of Rodin's finest works have been modelled and chiselled in one of the ateliers of the "Depôt des Marbres."

**The Proposed Walney Bridge.** A conference was recently held between the Furness Railway Co.'s directors, Messrs. Vickers, Sons & Maxim's directors, and the Barrow Corporation. Sir Benjamin Baker has submitted modified designs for a bridge which will greatly improve the channel fairway and very much improve the facilities for ships passing up and down the channel. It is probable that an opening something similar in principle to that adopted in the case of the Tower Bridge over the Thames will be accepted. This will do away with the piers in the centre, and will give a clear way for ships. This modified scheme will probably



HALF-ROOF PLAN. HALF-CEILING PLAN.

THE COLONNADE AT HAMPTON COURT PALACE.

be accepted by the Corporation and Messrs. Vickers, Sons & Maxim. It will, at any rate, have the merit of reducing the cost by some thousands of pounds, and will meet the serious objections raised as to the danger to shipping.

**For Art in Edinburgh.** THE report of the departmental committee on the Board of Manufactures recommends that it should be reconstituted and reduced to fifteen in number, and its name changed to the Board of Trustees. Three should be members of the Royal Scottish Academy, including the president; one should be nominated by the Royal Society, one by the Society of Antiquaries, one by the Town Council, and one by the University of Edinburgh. The other eight members should be appointed by the Secretary for Scotland. The members of the board should hold office for a period of five years, but should be eligible for re-election. The committee further recommends that the board should continue to hold Dunblane Cathedral in trust; that a new school of art for Edinburgh should be established on the lines—so far as possible—of the Glasgow School of Art, the present school under the board to be discontinued and the applied Art School incorporated with the new school, but remaining subject to the control of Sir Rowand Anderson as long as possible; and that a new building should be erected or acquired for the National Gallery in Edinburgh, towards which £20,000 should be contributed by the trustees from their accumulated funds, the balance being provided from Imperial funds. There is a proposal that the Royal High School (a fine classic building erected in 1829 from the designs of Thomas Hamilton) should be acquired for the Gallery.

**A Crematorium.** A CREMATORIUM at Bradford is to be erected by the Corporation in Scholemoor Cemetery at a cost of about £5,000. The structure has been designed by Mr. F. E. P. Edwards, A.R.I.B.A., in a free treatment of English Gothic, to harmonize with the other buildings in the cemetery. It consists of a mortuary hall or chapel, 30ft by 24ft.—where the body will be received and the memorial service held—with a separate chamber containing the furnace, which will be a gas one specially designed by Messrs. Toisoul, Fradet et Cie., of Paris, whose furnaces have been selected for crematoria in many important towns on the Continent. The great feature of this particular furnace is the readiness with which the temperature can be controlled. The heat obtained will not exceed 1,500 degs. Fahr., although in some crematoria the temperature reaches 2,000 degs., but it has been found that abnormally high temperatures do not give such satisfactory results. The gases from the furnace will be conducted to a chimney encased in a massive masonry tower.

**Washington's Great New Station.** FEW changes will impress future visitors to Washington more than those brought about by the new Union Station, which is about to be erected near the present Baltimore and Ohio station, at the foot of Capitol Hill. Much of the interior will have clear space overhead of 100ft. The main waiting-room will be 160ft. wide and 250ft. long, the main dining-room 65ft. by 100ft., with a height of 30ft., while the ticket lobby will be 65ft. high, 50ft. wide and 100ft. long. The station will be Romanesque in style. It will have a frontage of 750ft. and a depth of 350ft. Major Panghorn, who has made a special study of the work, says: "Germany's foremost station, and at this time in most respects the greatest abroad, that at Frankfort, will be relegated to second rank when the new Hamburg station reaches completion. But neither the Hamburg nor the Frankfort, nor the new station of the Orleans Railway in Paris, nor the great station at Dresden, can be regarded as in the same class with the latest American creation."

**Modern Domestic Architecture.** MR. ALFRED E. CORBETT, A.R.I.B.A., read a paper on "Modern Domestic Architecture" before the last meeting of the Manchester Society of Architects. He said that the advance during recent years in the art of architecture had been greatest in domestic work, and had been largely influenced by the feeling that modern architecture must be founded more on sound and straightforward construction, and the suitable treatment of materials, than on the forms of buildings erected to fulfil the requirements of some bygone century; although careful study of these old buildings was necessary for every architect. Mr. Corbett laid stress on the advantages of solid construction of floors, &c., and gave details of some varieties. A double cavity wall was mentioned as probably having some advantages. Half-timber work, when used merely as a casing in front of a brick wall, was condemned as being a useless and, more or less, perishable deception. The aspect and planning of the chief rooms, and of the house as a whole, were briefly commented on, and illustrated by examples of plans by Mr. Norman Shaw and others. Referring to the external treatment, it was insisted that the scheme must be mentally realized as a combination of materials of certain colours and textures, not merely as a pleasing arrangement of lines on paper; and that local material should generally be preferred. While moulded brick was a useful material, terra-cotta was thought to be quite unsuitable for country houses. The remainder of the paper consisted of comments on lantern slides showing more than fifty views and plans of good modern domestic work by leading architects.

## THE DISTINCTIVELY ENGLISH CHURCH.

AT a meeting of the Northern Architectural Association held last Wednesday the Rev. Canon Savage, of South Shields, read a paper on "The Distinctively English Type of Church." He dealt with the subject historically. Speaking of the Normans he said they put down everywhere their almost brutal form of architecture. They were a heavy-handed, heavy-footed people, who built heavily. There were beauties in Norman architecture, but generally it was brutal, coarse and heavy. He noted as a curious thing that, within a century, the Norman apsidal churches had to give way to the normal national type of rectangular east end. Then, from 1175 to 1195 they had the most rapid development of architecture in all the centuries of the past. Thus they came to the distinctively Early English style, and here they had the strong assertion of the English restraining taste and common-sense. At the end of the twelfth and the beginning of the thirteenth century, all over the country, they had in almost every parish indications of church building. Then was the uprising of the English as a nation. After that the style tended to become fantastical in the Decorated period. That might be accounted for by the national life, for it was the age of chivalry. Canon Savage brought his lecture down to the period from 1345 to 1355. The wars had broken down the power of chivalry, and gave the English a national life and the idea of a national army and navy. There was a great commercial development, and the Commons became the dominant partner, and the national life struck out in many ways. All this was translated into the church building and they saw developed the purely English type—the Perpendicular, which was the type of the plain, common-sense, average Englishman. Thus there was a complete preponderance of the Perpendicular everywhere except in Northumberland—partly because of the crushing influence of Durham Abbey and partly because of the fear of the Scotch. The Perpendicular style was the expression of free national life. From first to last they had continual importations from abroad; but from the beginning the national type remained built upon the old wooden churches of Northumbria.

# Electrical Notes.

### Simplex Conduits.

The Simplex Steel Conduit Co. are to be congratulated on the perpetual injunction which they have obtained in the High Court against another firm for selling other conduits in response to orders for "Simplex" good without clearly differentiating them from the plaintiffs' goods. It was indeed time for some such action to be taken. It is now many years since the Simplex Steel Conduit Co. put on the market a well standardized line of steel tubes and fittings for electrical wiring, which completely revolutionized the whole methods of wiring work and at one blow swept away gas barrel and compo. tubing. Unfortunately the company could not do more than register their name and the designs of certain fittings, and ever since they have been submitted to the most unscrupulous imitation on the part of other firms. This would be bad enough if the competitive conduits were equally well made, but such is not the case, and insult is added to injury by underselling with inferior imitations. Perhaps the example in question will be salutary, but it is satisfactory to see that during all this period the company have held their own in spite of the drawbacks referred to. There is no greater risk of breakdown of a wiring installation than by the use of tubing and fittings containing burrs and ridges. The "Simplex" goods are subjected to a sand-blast and also to accurate boring, which reduces such risks to a minimum.

### Draw-through Systems.

Whilst on this subject a word or two may be said regarding the methods employed by many jerry-wiring firms. Steel conduit systems, such as the "Simplex," have been specially designed with fittings and inspection-boxes, so that the whole of these can be let into the walls and laid under the floors with their tubing, and then the decorations completely finished off before a yard of wire is drawn in. It is only a question of properly scheming out such an installation, and every builder or architect who has a say in the matter should see that the work is carried out in this manner. But the method frequently obtaining is to thread the tubing on to the wires during the course of building operations, and then to cover the tubing and fittings with plaster. As a result, not only are the wires often in contact with the lime which is lying about, but the system is not a draw-through one. In time, therefore, when a fault occurs through the lime having perished the rubber insulation, it will most likely be necessary to disturb the walls in order to rewire the circuit. Such work, although cheap, is a standing menace to the security of an installation, and ultimately is sure to bring electricity into discredit.

### The Maximum Demand Indicator.

This little instrument, which is to be found in most consumers' cellars nowadays, is responsible for many mental gymnastics on the part of these individuals, who often apply to their wiring contractors to explain how the supply authorities' bills are made up. The elementary theory of the system may be explained briefly. The central station always needs to have sufficient machinery to meet the sudden demand which occurs between 7 and 9 p.m. During the rest of the twenty-four hours this plant is largely standing idle. It is intended that the consumer should help to pay for the interest on this plant for the reason that it is provided to meet his requirements. The indicator reads the highest current he has taken during the quarter, *i.e.*, the largest number of lamps he has had on at any one time. In the most elementary case this "maximum demand" is assumed to have been taken for, say, two hours every night, and the resulting number of units is subtracted from that shown by the meter. The maximum demand units are charged at the high rate, and the difference at the low rate. Therefore, if a consumer burns his lamps long and steadily, he will be charged very little at the high rate. On the other hand, if he burns his lamps for short periods only, and perhaps has a spasmodic flare-up now and again, he will pay heavily for the extra demand he puts on the machinery. In equity this is only right, but in actual practice the system is generally much more complicated, and the consumer often gets the impression that he is being "done," which is not conducive to business. Next week we shall say something about alternative systems.

A. M. I. E. E.

### Improved Electric Switches.

Some new leaflets have been issued by the Edison & Swan United Electric Light Co., Ltd., of Queen Street, E.C. No. A 2015 describes the "Ediswan" improved pattern knife switches, which are suitable for circuits up to 550 volts, and are listed in six sizes for single, double and triple pole, and also for single and double as change-over switches. They are very solid and the workmanship is of the highest. Every part is standardized and interchangeable, and this six-page leaflet includes plans and tables of dimensions. Leaflet No. A 2016 shows a strongly made h.v. pear switch; and leaflet No. 2017 a new h.v. wall socket. Both of these have been carefully designed with a view to absolute reliability on h.v. circuits, and they can be easily wired. The latter is listed in two sizes for 5 and 15 amperes respectively. All those interested should write to the Edison & Swan Co. for copies of these leaflets.

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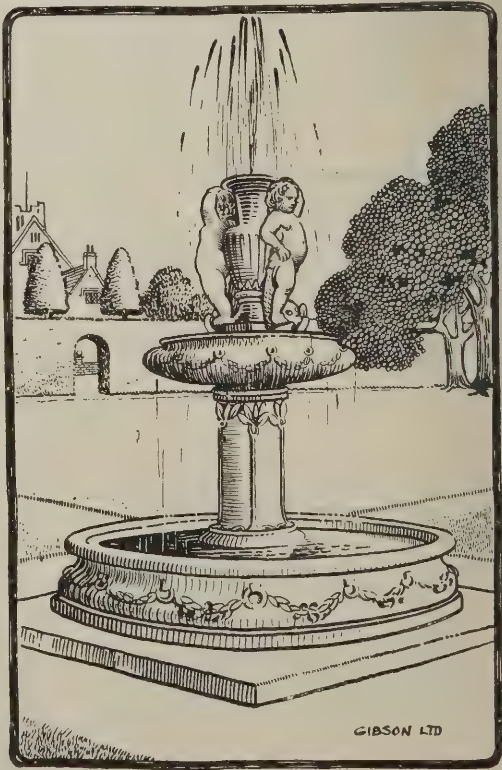

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**CATALOGUES AND ESTIMATES FREE.**

# Tenders.

*Information from accredited sources should be sent to "The Editor" at latest by noon on Monday if intended for publication in the following Wednesday's issue. Results of Tenders cannot be accepted unless they contain the name of the Architect or Surveyor for the work.*

*Addressed postcards on which lists of tenders may be stated will be sent post free on application to the Manager,* Builders' Journal, 6, *Great New Street, Fetter Lane, E.C.*

**Dartford.**—For the construction of about 3,205ft. of 10in. stoneware pipe sewer and manholes up Fulwich Road to Bow Arrow Hospital, for Joint Hospital Committee. Mr. W. Harston, A.M.I.C.E., engineer, 8, High Street, Dartford.—

| | |
|---|---|
| Parsons & Parsons, Ilford | £3 150 |
| T. Adams, Wood Green, N. | 2,964 |
| Davis, Ball & Co., Bromley, Kent | 2,550 |
| G. Bell, Tottenham Hale | 2,391 |
| J. Jackson, Forest Gate, E. | 2,280 |
| W. H. Wheeler,* Blackfriars Road, London | 2,193 |

* Accepted.

**Irthlingborough (Northants).**—For cast-iron pipes, for the Irthlingborough U.D.C. Mr. J. Waugh, C.E., engineer, Bradford:—

| | | | |
|---|---|---|---|
| Staveley Co. | £1,813 | 12 | 6 |
| Clay Cross Co. | 1,812 | 15 | 10 |
| Stanton Iron Co. | 1,811 | 0 | 0 |
| Cochrane & Co. | 1,810 | 2 | 6 |
| Watson-Gow | 1,782 | 17 | 6 |
| J. & S. Roberts | 1,774 | 7 | 6 |
| Sheepbridge Co. | 1,757 | 1 | 0 |
| Parsons* | 1,743 | 12 | 0 |
| A. G. Cloake | 1,707 | 5 | 6 |

* Accepted.

**London.**—For alterations, &c., to Nos. 1 and 2, George Street, Hanover Square, for Messrs. John Broadwood & Sons, Ltd. Mr. Henry Tanner, junior architect, Carlton Chambers, 12, Regent Street, S.W. Quantities by Messrs. W. H. & P. B. Strudwick, 2, New Court, Carey Street, W.C.:—

| | |
|---|---|
| Carmichael | £9,108 |
| Holloway Brothers | 8,490 |
| Colls & Sons | 8,465 |
| John Grover & Son | 8,436 |
| A. G. Webber | 8,150 |
| Patman & Fotheringham* | 7,973 |

* Accepted.

**Llanwrtyd Wells (Brecon).**—For the construction of a storage restorage reservoir and filter-beds of about 262,500 gals. capacity, of a service reservoir of 50,000 gals. capacity, laying of 6,160yds. cast-iron socketed pipes, with all necessary valves, for the Builth R.D.C. Mr. R. L. Bamford, surveyor, Wildemarsh Street, Hereford:—

| | | | |
|---|---|---|---|
| J. M. Willis, Builth | £5,488 | 5 | 5 |
| Celtic Acetylene Co., Craven Arms | 4,757 | 17 | 1 |
| Bridgman, Paynton | 4,718 | 2 | 10 |
| Johnson Brothers, Hereford | 4,434 | 5 | 6 |
| Fitzmaurice & Co., Birmingham | 4,177 | 5 | 6 |

**Nantwich.**—For the erection and completion of a new infirmary and nurses' home at the union workhouse, for the Guardians. Mr. C. E. Davenport, architect, 152, Hospital Street, Nantwich:—

| | |
|---|---|
| C. W. Davenport, Warrington | £8,740 |
| Micklewright & Sons, Crewe | 8,237 |
| J. Williams, Crewe | 8,108 |
| J. Morrey, Crewe | 8,037 |
| W. Townson & Son, Ltd., Bolton | 7,850 |
| F. Matthews, Nantwich | 7,760 |
| G. Bullock, Shrewsbury | 7,700 |
| Buchall Brothers, Middlewich | 7,480 |
| Cox & Vaughan, Nantwich | 7,420 |
| T. Huxley, Malpas, Cheshire | 7,300 |
| S. Manley, Aston, Nantwich | 7,220 |
| J. Gallimore, Newcastle, Staffordshire | 7,198 |
| J. T. Gresty,* Willaston, Nantwich | 7,197 |

* Accepted.

**Pantywyll (Wales).**—For rebuilding the Castle Inn, for Messrs. Giles & Harrup, The Brewery, Merthyr Tydfil. Mr. C. M. Davies, architect, 12, High Street, Merthyr:—

| | | | |
|---|---|---|---|
| J. Jenkins | £1,630 | 10 | 0 |
| S. Hawkins | 1,530 | 0 | 0 |
| E. Sullivan | 1,480 | 0 | 0 |
| M. Warlow | 1,394 | 10 | 0 |
| J. Williams | 1,389 | 10 | 0 |
| T. Jones,* Walter Street, Dowlais | 1,247 | 10 | 0 |

* Accepted.

**Rochdale.**—Por the erection of the first portion of the Church of the Good Shepherd. Mr. E. H. Lingen Barker, architect, Hereford:—

| | |
|---|---|
| Hatch & Son | £3,784 |
| Ashworth & Wolfenden | 3,190 |
| G. F. Halliday | 3,050 |
| W. Hopkins | 2,999 |
| G. F. Endersby | 2,965 |
| Nicholl & Son | 2,942 |
| T. Pickles,* Luddenden Foot | 2,620 |
| G. H. Eastwood | 2,615 |

* Accepted.

**Swadlincote.**—For the erection of a fire-station, dwelling-house, stabling, shedding, &c., in the Darklands Road, for the Swadlincote D.C. Mr. Thomas Kidd, town engineer and surveyor:—

| | | | |
|---|---|---|---|
| J. Godfrey, Woodville | £2,732 | 19 | 2 |
| W. Goole | 2,578 | 7 | 6 |
| T. Barlow, Nottingham | 2,381 | 7 | 3 |
| T. Boss, Church Gresley | 2,297 | 8 | 7 |
| J. F. Price, Nottingham | 2,226 | 0 | 0 |
| J. Waterfield, Woodville | 2,190 | 15 | 3 |
| G. Hodges, Burton-on-Trent | 2,149 | 0 | 0 |
| Clarke, Nottingham | 2,145 | 7 | 10 |
| C. Jones, Newhall | 2,118 | 14 | 7 |
| Cartwright Brothers, Granville Street, Woodville | 2,060 | 18 | 0 |
| A. Brown & Son, Derby | 2,047 | 0 | 0 |
| Cuthbert, Nottingham | 2,043 | 17 | 11 |
| E. Clarke, Woodville | 2,004 | 6 | 5 |
| Lowe & Sons,* Burton-on-Trent | 1,967 | 0 | 0 |

* Accepted.

**Wallingford.**—For the erection of administration block, for the Wallingford and Crowmarsh Joint Hospital Board. Mr. Samuel Couch-Jones, architect and surveyor, Land Chambers, Friar Street, Reading:—

| | | |
|---|---|---|
| Hughes | £1,299 | 0 |
| Brasher & Son,* Wallingford | 1,180 | 0 |
| Bosher & Son | 1,098 | 10 |
| Gibson & Son | 1,078 | 0 |

* Accepted. [Architect's estimate, £1,160.]

**Weasenham (Norfolk).**—For alterations and additions to Weasenham Hall, for the Right Hon. the Earl of Leicester, K.G. Mr. C. Smedley Beck, architect, Norwich. Quantities by Mr. A. J. Chambers, Norwich:—

| | |
|---|---|
| R. Dye | £11,435 |
| Smith & Son | 11,065 |
| G. Riches | 10,795 |
| Youngs & Son | 10,780 |
| W. H. Brown | 10,759 |
| Mussell, White & Sapp | 10,670 |
| Hawes & Sons,* Norwich | 9,999 |

* Accepted.

**Worcester.**—For sewage-disposal works, for the Corporation. Mr. T. Caink, A.M.I.C.E., engineer:—

Contract No. 2.—Construction of disintegrating tanks, distributing tower, effluent carrier, &c.

| | | | |
|---|---|---|---|
| R. H. B. Neal, Plymouth | £14,430 | 0 | 0 |
| J. & T. Binns, Croydon | 14,056 | 0 | 0 |
| A. G. Osenten, Tilehurst | 13,826 | 5 | 0 |
| J. Dickson, St. Albans | 13,436 | 6 | 0 |
| Stokes Brothers, Worcester | 12,470 | 0 | 0 |
| G. Bell, London | 11,921 | 0 | 0 |
| Currall, Lewis & Martin, Birmingham | 11,710 | 10 | 11 |
| Bentley & Lock, Leicester | 11,020 | 6 | 10 |
| R. W. Fitzmaurice & Co., Ltd., Birmingham | 10,879 | 8 | 6 |
| Johnson & Langley, Leicester | 10,750 | 1 | 9 |
| A. Jewell, Market Harborough | 10,465 | 11 | 2 |
| T. Vale & Sons, Ltd., Stourport | 9,983 | 12 | 9 |
| J. & A. Brazier, Bromsgrove | 9,589 | 13 | 9 |

* Accepted. [Engineer's estimate, £12,800.]

# Bankruptcies.

[Abbreviations: R.O.—receiving order; P.E.—public examination; C.C.—county court; O.R.—official receiver; Adj.—Adjudication.]

During the week ending Nov. 27th twenty-four failures in the building and timber trades in England and Wales were gazetted.

J. E. Buzwell, painter, New Malden. Adj. Aug. 8th.

W. Gerring, builder, Hanwell. R.O. Nov. 20th.

J. H. Greaves, architect, Harringay. Adj. Nov. 20th.

T. Thomas, plumber, Hirwain. Adj. Nov. 12th.

W. H. Waterman, architect, Fenchurch Street, E.C. Adj. Nov. 20th.

T. H. Wymonde, engineer, London. P.E., Bankruptcy Court, Jan. 12th, at 12.

Atkin, Burrell & Co., builders, Newcastle-upon-Tyne. Adj. Nov. 18th.

T. M. Bicknell, carpenter and builder, Smethwick. R.O. Nov. 21st

J. R. Williams & Co., carpenters, Morriston. P.E., Swansea Town Hall, Dec. 11th, at 11 30.

J. A. Bunce, builder, Newport, Hants. R.O. Nov. 10th. P.E., Newport Town Hall, December 7th, at 3.15.

F. J. Dell, decorator, Warrington. P.E., Warrington C.C., Dec. 4th, at 11.

E. Williams, painter, Asham-in-Furness. R.O. Nov. 10th.

S. Burr, builder, Wood Green. R.O. Nov. 11th. P.E., Edmonton C.C., Dec. 21st, at 11.30.

W. Edger, builder, Port Talbot. P.E., Neath Town Hall, Dec. 1st, at 11.30.

E. C. Share painter, Treherbert. Adj. Nov. 10th. P.E., Pontypridd C.C., Dec. 15th, at 11.15.

G. Mitchell, stone merchant, Portland. Adj. Nov. 12th.

J. Westbrooke, builder, Thornton Heath. Adj. Nov. 10th.

W. Davies, junior, quarry proprietor, Bettws-y-Coed. Adj. Nov. 9th.

C. E. Bassington, builder, London, W. Liabilities £3,925; assets, a gold watch value £3 5s.

A. Maddaleni, builder and stonemason, Southend-on-Sea. R.O. Nov. 18th.

L. Lupton, painter and plumber, Cark-in-Cartmel. R.O. Nov. 16th.

J. Diamond, timber merchant, Bethnal Green. R.O. Nov. 13th. First meeting, London Bankruptcy Court, Nov. 26th, at 11. P.E., same, Jan. 21st, at 11.

Eade & Co., timber and builders' supply merchants, Brighton. R.O. Nov. 13th. P.E., Brighton C.C., Dec. 10th, at 11.

B. Lewis, builder, Nantmel. R.O. Nov. 4th. First meeting, 1, High Street, Newtown, Nov. 25th, at 10.30. P.E., Newtown C.C., same day, at 11.30.

L. M. Jones, carpenter and joiner, Pontycymmer. First meeting, 117, St. Mary's Street, Cardiff, Nov. 19th, at 12.30. P.E., Town Hall, Cardiff, Dec. 8th, at 11.

F. S. Barnes, plumber and house decorator, Witney. R.O. Nov. 2nd. P.E., Oxford County Hall, Nov. 18th, at 11.30.

H. G. Wass, builder, Nottingham. Gross liabilities £2,859; £368 expected to rank for dividend; assets £269; deficiency £98.

R. H. Parkyn, builder, Newport, Mon. Gross liabilities £3,625; £1,104 to rank for dividend; assets £833; deficiency £270. P.E., Newport Town Hall, Dec. 10th, at 11.

# Current Market Prices.

### FORAGE.

| | | £ | s. | d. | £ | s. | d. |
|---|---|---|---|---|---|---|---|
| Beans | per qr. | 1 | 14 | 0 | 2 | 0 | 0 |
| Clover, best | per load | 4 | 5 | 0 | 4 | 10 | 0 |
| Hay, good | do. | 3 | 12 | 6 | 4 | 0 | 0 |
| Sainfoin mixture | do. | 3 | 15 | 0 | 4 | 5 | 0 |
| Straw | do. | 1 | 10 | 0 | 2 | 0 | 0 |

### OILS AND PAINTS.

| | | £ | s. | d. | £ | s. | d. |
|---|---|---|---|---|---|---|---|
| Castor Oil, French | per cwt. | 1 | 0 | 5 | | — | |
| Colza Oil, English | do. | 1 | 3 | 0 | | — | |
| Copperas | per ton | 2 | 0 | 0 | | — | |
| Lard Oil | per cwt. | 2 | 15 | 0 | 2 | 17 | 0 |
| Lead, white, ground, carbonate | do. | 1 | 4 | 10 | | — | |
| Do. red | do. | 1 | 0 | $4\frac{1}{2}$ | | | |
| Linseed Oil, barrels | do. | 0 | 18 | 3 | | — | |
| Petroleum, American | per gal. | 0 | 0 | $7\frac{5}{8}$ | 0 | 0 | $7\frac{7}{8}$ |
| Do. Russian | do. | 0 | 0 | $6\frac{1}{4}$ | 0 | 0 | $7\frac{1}{8}$ |
| Pitch | per barrel | 0 | 8 | 0 | | — | |
| Shellac, orange | per cwt. | 11 | 11 | 0 | | — | |
| Soda, crystals | per ton | 3 | 2 | 6 | 3 | 5 | 0 |
| Tallow, Town | per cwt. | 1 | 7 | 6 | | — | |
| Tar, Stockholm | per barrel | 1 | 0 | 6 | | — | |
| Turpentine | per cwt. | 1 | 14 | 0 | | — | |

### METALS.

| | | £ | s. | d. | £ | s. | d. |
|---|---|---|---|---|---|---|---|
| Copper, sheet, strong | per ton | 71 | 0 | 0 | | — | |
| Iron, Staffs., bar | do. | 6 | 0 | 0 | 8 | 10 | 0 |
| Do. Galvanised Corrugated sheet | do. | 10 | 15 | 0 | | — | |
| Lead, pig, Soft Foreign | do. | 11 | 2 | 6 | 11 | 5 | 0 |
| Do. do. English common brands | do. | 11 | 10 | 0 | | — | |
| Do. sheet English 3lb. per sq. ft and upwards | do. | 14 | 0 | 0 | | — | |
| Do. pipe | do. | 15 | 0 | 0 | | — | |
| Nails, cut clasp, 3in. to 6in. | do. | 9 | 5 | 0 | | — | |
| Do. floor brads | do. | 9 | 0 | 0 | | — | |
| Steel, Staffs., Girders and Angles | do. | 5 | 10 | 0 | 6 | 5 | 0 |
| Do. do. Mild bars | do. | 6 | 0 | 0 | 6 | 5 | 0 |
| Tin, Foreign | do. | 118 | 15 | 0 | 119 | 5 | 0 |
| Do. English ingots | do. | 122 | 10 | 0 | 124 | 0 | 0 |
| Zinc, sheets, Silesian | do. | 23 | 2 | 6 | | — | |
| Do. do. Vielle Montaigne | do. | 23 | 10 | 0 | | — | |
| Do. Spelter | do. | 20 | 10 | 6 | 20 | 5 | 0 |

### TIMBER.

Soft Woods.

| | | £ | s. | d. | £ | s. | d. |
|---|---|---|---|---|---|---|---|
| Fir, Dantzic and Memel | per load | 1 | 13 | 0 | 3 | 0 | 0 |
| Pine, Quebec, Yellow | do. | 5 | 5 | 0 | 6 | 5 | 0 |
| Do. Pitch | do. | 2 | 12 | 0 | 3 | 3 | 0 |
| Laths, log, Dantzic | per fath. | 4 | 10 | 0 | 5 | 10 | 0 |
| Do. St. Petersburg | do. | 7 | 5 | 0 | | — | |
| Deals, Miramichi Spruce, 1st, 2nd and 3rd, 3×8 | per stand. | 7 | 15 | 0 | | — | |
| Do. do. Yellow Pine 3×11 | do. | 6 | 10 | 0 | | — | |
| Do. Rio Prime Pitch Pine, 4×9 | do. | 10 | 0 | 0 | | — | |
| Do. Skelleftea, Yellow, 5th, 4×9 | do. | 10 | 10 | 0 | | — | |
| Do. Nederkalix, Yellow, 2nd, 4×8 | do. | 10 | 10 | 0 | | — | |
| Do. do. do. 3rd, 3×8 | do. | 8 | 10 | 0 | | — | |
| Do. Wartsala and Abo, Yellow Unsorted, 3×12 | do. | 9 | 0 | 0 | | — | |
| Do. Mesane, White, 3rd, 3×9 | do. | 8 | 15 | 0 | | — | |
| Do. do. Yellow, 4th, 3×8 | do. | 9 | 10 | 0 | | — | |
| Do. Onega, Yellow, 4th, 3×11 | do. | 7 | 0 | 0 | | — | |
| Do. do. White, 2nd, 3×9 | do. | 9 | 5 | 0 | | — | |
| Do. St. Petersburg, Yell., 3rd, 3×9 | do. | 7 | 15 | 0 | | — | |
| Do. do. do. do. 3×11 | do. | 7 | 5 | 0 | | — | |
| Do. do. White, 3rd, 3×9 | do. | 7 | 15 | 0 | | — | |
| Do. Kovda, Yellow, 4th, 3×9 | do. | 8 | 10 | 0 | | — | |
| Do. White Sea Yellow, 2nd, 3×11 | do. | 16 | 0 | 0 | | — | |
| Do. do. do. 3rd, 3×9 | do. | 12 | 10 | 0 | | — | |
| Do. Montreal, Yell. Pine, 2nd, 3×9 and 10 to 3×15 and 19 | do. | 13 | 0 | 0 | | — | |
| Do. do. do. do. 3rd, 3×11 | do. | 12 | 5 | 0 | 12 | 10 | 0 |
| Do. do. do. do. 4th, 3×11 to 19 | do. | 9 | 15 | 0 | | — | |
| Do. do. do. do. 4th, 3×11 | do. | 9 | 0 | 0 | 10 | 0 | 0 |
| Do. do. Spruce, 2nd, 3×9 | do. | 10 | 0 | 0 | | — | |
| Do. Quebec Yellow, Pine, 3rd, 3×11 | do. | 12 | 0 | 0 | 12 | 5 | 0 |
| Do. do. Red Pine, 1st, 3×11 | do. | 15 | 10 | 0 | | — | |
| Do. do do. 2nd, 3×10 | do. | 10 | 0 | 0 | | — | |
| Do. do. Spruce, 3rd, 3×11 | do. | 8 | 15 | 0 | | — | |
| Do. St. John's, Spruce, 1st, 2nd, and 3rd, 4×9 | do. | 10 | 15 | 0 | | — | |
| Battens, all kinds | do. | 6 | 10 | 0 | 21 | 15 | 0 |
| Flooring Boards 1in. prepared, 1st | per square | 0 | 11 | 9 | 0 | 12 | 3 |
| Do. 2nd | do. | 0 | 9 | 6 | | | |
| Do. 3rd, &c. | do. | 0 | 8 | 3 | 0 | 8 | 9 |

Hard Woods.

| | | £ | s. | d. | £ | s. | d. |
|---|---|---|---|---|---|---|---|
| Ash, Quebec | per load | 3 | 12 | 6 | | — | |
| Birch, Quebec | do. | 3 | 12 | 6 | 3 | 17 | 0 |
| Box, Turkey | per ton | 15 | 0 | 0 | 20 | 0 | 0 |
| Cedar, Cuba | per ft. sup. | 0 | 0 | $5\frac{1}{4}$ | | — | |
| Do. Honduras | do. | 0 | 0 | $4\frac{15}{16}$ | | — | |
| Do. Tobasco | do. | 0 | 0 | 3 | | — | |
| Elm, Quebec | per load | 4 | 2 | 6 | | — | |
| Mahogany, Average Price for Cargo, Honduras | per ft. sup. | 0 | 0 | $6\frac{19}{32}$ | | — | |
| Do. African | do. | 0 | 0 | $3\frac{15}{16}$ | | — | |
| Do. St. Domingo | do. | 0 | 0 | $3\frac{29}{32}$ | | — | |
| Do. Cuba | do. | 0 | 0 | $4\frac{11}{32}$ | 0 | 0 | $4\frac{11}{16}$ |

# Complete List of Contracts Open.

| DATE OF DELIVERY. | WORK TO BE EXECUTED. | FOR WHOM. | FROM WHOM FORMS OF TENDERS MAY BE OBTAINED |
|---|---|---|---|
| | **BUILDING:** | | |
| Dec. 3 | Cymmer, Porth, Wales—Librarian's House | —— | W. Thomas, Secretary, Library, Cymmer, Porth. |
| „ 3 | London, E.—Library | Poplar Borough Council | C. H. Norton, 14 Bedford Row, W.C. |
| „ 3 | Chatham—Bricks | Corporation | C. Day, Borough Surveyor, Town Hall, Chatham. |
| „ 3 | Batley, Yorks—Classrooms, &c. | Brownhill Church Trustees | F. Ineson, 18 Bradford Road, Batley. |
| „ 3 | Llanberis, Wales—House, &c. | —— | H. Thomas, 7 Castle-Ditch, Carnarvon. |
| „ 3 | Norwich—Cement | Corporation | A. E. Collins, City Engineer, Guildhall, Norwich. |
| „ 3 | Sligo, Ireland—Cement | Harbour Commissioners | T. J. Mercer, Secretary, Harbour Office, Sligo. |
| „ 4 | York—Auction Mart, &c. | —— | A. Creer, City Engineer, Guildhall, York. |
| „ 4 | London, E.—Roof over Corridor, &c. | St. Geo.'s-in-the-East Guardians | J. R. Brown, Clerk, Raine Street, Old Gravel Lane, E. |
| „ 4 | Golcar, Yorks—Three Houses | —— | A. Shaw, Architect, Golcar. |
| „ 4 | Birkdale, Lancs—Hospital | Urban District Council | J. F. Keeley, Clerk, Town Hall, Birkdale. |
| „ 5 | Worcester—Additions to School | Education Committee | H. Rowe, City Architect, Pierpont Street, Worcester. |
| „ 5 | Seaford Sussex—Mortuary | Urban District Council | Surveyor, 3 Clinton Place, Seaford, Sussex. |
| „ 5 | Roche, Cornwall—Cattle-House, &c. | —— | Farmhouse, Little Brynn. |
| „ 5 | Nottingham—Minor Repairs | Education Committee | W. J Abel, Clerk, Education Offices, Victoria Street, Nottingham. |
| „ 5 | Deal—Rebuilding Inn, &c. | —— | W. J. Jennings & J. F. Duthoit, 6 Claremont Place, Dover. |
| „ 7 | Trimdon Grange, Durham—Fireclay Goods | —— | Storekeeper, Trimdon Grange Colliery Co., Durham. |
| „ 7 | Wokingham Police Station | Standing Joint Committee | J. Morris, County Surveyor, Broadway Buildings, Reading. |
| „ 7 | Dover—Bricks, Lime, &c. | Harbour Board | W. Mowll, Registrar, Dover Harbour, Castle Street, Dover. |
| „ 7 | York—Cement, Chimney Pots, &c. | North-Eastern Railway Co. | E. H. Clark, Stores, Gateshead. |
| „ 7 | Ynysybwl, Wales—Bakehouse, &c. | Co-operative Society | D. D. Jones, 45 Robert Street, Ynysybwl. |
| „ 7 | Jarrow—Alterations, &c., to School | U. D. School Board | T. H. Spencer, Clerk, Jarrow. |
| „ 7 | Croydon—Two Relief Stations | Guardians | Wills & Anderson, 4 Adam Street, Adelphi, London. |
| „ 7 | Clonmel, Ireland—Twelve Houses | Corporation | Borough Surveyor, Town Hall, Clonmel. |
| „ 7 | Berwick-on-Tweed—Rebuilding House and Shop | —— | W. Gray, 2 Ivy Place, Berwick-on-Tweed. |
| „ 8 | Herne Bay—Alterations, &c., to Town Hall | Urban District Council | F. W. J Palmer, Surveyor, Council Offices, Town Hall, Herne Bay. |
| „ 8 | London, E.C.—Bricklayers' Materials | Corporation | City Surveyor, Guildhall, E.C. |
| „ 9 | Macclesfield—Cement, Bricks, &c | Corporation | Borough Engineer, Town Hall, Macclesfield. |
| „ 9 | Haltwhistle Northumberland—Boardroom, &c. | Guardians | J. M. Clark, Surveyor, Haltwhistle, Northumberland. |
| „ 11 | Gallows Plain, near Hertford—Alterations, &c., to Hospital | Joint Hospital Board | G. H. Gisby, Clerk, Ware, Herts. |
| „ 11 | Peterborough—Extension of Post Office | Commissioners of H.M.Works, &c | Secretary, H.M. Offices of Works, Storey's Gate, London S.W. |
| „ 11 | Queenborough, Kent—Coastguard Station | —— | Director of Works Department, Admiralty, 21 Northumberland Avenue, W.C. |
| „ 11 | London, S E—Nine Shops | —— | A. L. Guy, 4 Verulam Buildings, Grays's Inn, W.C. |
| „ 11 | Littlehampton, Sussex—Coastguard Station | —— | Superintendent, Engineer, H.M. Dockyard, Portsmouth. |
| „ 11 | Newton St. Cyres Farm Buildings | —— | Ellis, Son & Bowden, Surveyors, Bedford Chambers, Exeter. |
| „ 11 | Lurgan, co. Armagh—Post Office | Board of Public Works | W. H. Stephens & Son, 13 Donegall Square North, Belfast. |
| „ 12 | Manchester—Exhauster-House, &c. | Gas Committee | C. Nickson, Superintendent, Gas Dept., Town Hall, Manchester. |
| „ 12 | Aberystwyth—Arcade and Concert Hall | D. Phillips | J. A. Jones, 7 Queen's Terrace, Aberystwyth. |
| „ 12 | Wigan Swimming Baths | Corporation | J. B. & W. Thornley, Architects, Library Street, Wigan. |
| „ 12 | Murroe, Limerick—Church | Very Rev. J. J. Duan | J. O'Malley, Architect, Glenworth Street, Limerick. |
| „ 14 | Birmingham—Superstructure, Internal Finishings, &c., of University Buildings. | —— | A. Webb & E. J. Bell, 19 Queen Anne's Gate, London, S.W. |
| „ 15 | London, S.E.—River Wall, &c. | Commissioners of H.M.Works &c. | J. Wager, H.M. Office of Works, &c., Storey's Gate, S.W. |
| „ 15 | Shipley, Yorks—Gasworks Extension | Urban District Council | T. Newbigging & Son, 5 Norfolk Street, Manchester. |
| „ 15 | Llansaintffraid Minister's House, Schoolroom, &c. | Calvinistic Methodist Connexion | Shayler & Ridge, Bank Chambers, Oswestry. |
| „ 16 | Clutton, near Bristol—Alterations, &c., to Workhouse | Guardians | W. F. Bird, Architect, Midsomer Norton. |
| „ 21 | Roseyards, co. Antrim Ireland—Church | Presbyterian Church Committee | S. J. M'Fadden, Architect, Queen Street, Coleraine. |
| „ 21 | Tylorstown—Sixty-four Houses | Duke of York Building Club | D. C. Evans, Secretary, Duke of York Hotel, Tylorstown. |
| „ 28 | Bradwell-on-Sea—Six Workmen's Cottages | Maldon Rural District Council | H. G. Keywood, 6 Market Hill, Maldon, Essex. |
| No date. | Portishead, Bristol—Nautical School | —— | E. Gabriel, 42 Old Broad Street, E.C. |
| | **ENGINEERING:** | | |
| Dec. 3 | Chelmsford—Pipelaying | Rural District Council | J. Dewhirst, Engineer, Avenue Chambers, Chelmsford. |
| „ 4 | Belfast—Heating and Ventilating Systems | Assembly Buildings Committee. | Young & Mackenzie, Architects, Scottish Amicable Buildings, Belfast |
| „ 4 | Hardingstone, Northants—Sewage Tank, &c. | Rural District Council | Sharman & Archer, Architects, Wellingborough. |
| „ 5 | London S.W.—Electric Wiring, &c. | London County Council | County Hall, Spring Gardens, S.W. |
| „ 7 | Park Royal, near Acton—Electrical Plant | Great Western Railway Co. | Kennedy & Jenkin, 17 Victoria Street, Westminster, S.W. |
| „ 7 | Brighton—Power Station Plant | Town Council | A. Wright, Star Chambers, 30 Moorgate Street, E.C. |
| „ 7 | London—Water Tube Boilers, &c. | Great Western Railway Co. | Kennedy & Jenkin, 17 Victoria Street, Westminster, S.W. |
| „ 7 | Glasgow—Steelwork | Caledonian Railway Co. | Company's Divisional Engineer, 3 Germiston Street, Glasgow. |
| „ 7 | York Electrical Stores | North-Eastern Railway Co. | E. H. Clark, Stores, Gateshead. |
| „ 7 | York—Telegraph Stores | North-Eastern Railway Co. | C. H. Ellison, Telegraph Superintendent, York. |
| „ 8 | London, S E.—Electric Generators, &c. | London County Council | County Hall, Spring Gardens, S.W. |
| „ 8 | Bishop's Stortford—Repairing Engines, &c. | Urban District Council | R. S. Scott, Surveyor, County Offices, North St, Bishop's Stortford. |
| „ 8 | Birmingham—Boilers | Tame and Rea District Drainage Board. | J. D. Watson, Engineer, Tyburn, near Birmingham. |
| „ 8 | Wimbledon—Water Softening Plant | Urban District Council | H. Tomlinson-Lee, Chief Elec. Engr., Downsford Rd., Wimbledon. |
| „ 9 | London, E.C.—Steelwork, &c. | East Indian Railway Co. | C. W. Young, Secretary, Nicholas Lane, London, E.C. |
| „ 9 | London, W.—Flagmaking Plant | Urban District Council | Swinburne, Cooper & Baillie, 82 Victoria St., Westminster, S.W. |
| „ 9 | London, E.C.—Girder Bridge and Machines | East Indian Railway Co. | Secretary, Company's Offices, Nicholas Lane, E.C. |
| „ 14 | West Ham—Electric Wiring, &c. | Education Committee | W. Jacques, 2 Fen Court, Fenchurch Street, E.C. |
| „ 14 | London, N.E.—Boilers, &c. | Bethnal Green Union | G. H. Hughes, 97 Queen Victoria Street, London, E.C. |
| „ 14 | Madrid—Port Works | —— | Commercial Intelligence Branch, Board of Trade, 50 Parliament Street, S.W. |
| „ 14 | Maldon Essex—Waterworks | Rural District Council | H. G. Keywood, Water Engineer, Maldon, Essex. |
| No date | Toronto, near Bishop Auckland—Heating Church | —— | Hicks & Charlewood, 67 Westgate Road, Newcastle-on-Tyne. |
| „ | Riviera, Spain—Electric Lighting of Town | —— | Secretariat of the Municipality, Riviera, Spain. |
| | **FURNITURE:** | | |
| Dec. 4 | Christchurch—Bedsteads, &c. | Guardians | Clerk, Guardians' Offices, Christchurch. |
| | **IRON AND STEEL:** | | |
| Dec. 3 | Chatham—Street Gratings and Covers | Corporation | C. Day, Borough Surveyor, Town Hall, Chatham. |
| „ 3 | Southend-on-Sea—Fencing | Corporation | E. J. Elford, Borough Surveyor, Southend-on-Sea. |
| „ 3 | Chelmsford—Pipes | Rural District Council | J. Dewhirst, Engineer, Avenue Chambers, Chelmsford. |
| „ 3 | Warrington—Hurdles | Street Improvement Committee | Borough Surveyor, Town Hall Warrington. |
| „ 3 | Norwich—Stores | Corporation | A. E. Collins, City Engineer, Guildhall, Norwich. |
| „ 3 | Sligo, Ireland Stores | Harbour Commissioners | T. J. Mercer, Secretary, Harbour Office, Sligo. |
| „ 3 | London, E.C.—Stores | Gt. Indian Peninsula Railway Co. | Secretary, 48 Copthall Avenue, E.C. |
| „ 4 | Aldershot—Tubes and Fittings | Gas & Water Co. | R. W. Edwards, Secretary, Aldershot. |
| „ 4 | Birmingham—Pipes, &c. | Water Committee | E. A. Lees, Secretary, 44 Broad Street, Birmingham |
| „ 5 | London, E.C.—Stores | Thames Conservancy | R. Phillipson, Secretary, Offices, Victoria Embankment, E.C. |
| „ 7 | South Hetton, Durham—Iron Castings, &c. | Coal Co., Ltd. | J. R. Lambert, South Hetton, Sunderland. |
| „ 7 | York—Railway Stores | North Eastern Railway Co. | E. H. Clark, Stores, Gateshead. |
| „ 7 | Trimdon Grange, Durham—Stores | Collieries Owners | Storekeeper, Trimdon Grange, Colliery, co. Durham. |
| „ 7 | Dover—Stores | Harbour Board | W. Mowll, Register, Dover Harbour, Castle Street, Dover. |
| „ 8 | London, E.C.—Stores | Corporation | City Surveyor, Guildhall, E C. |
| „ 9 | Macclesfield—Iron and Steel Goods | Corporation | Borough Engineer, Town Hall, Macclesfield. |
| „ 9 | London, E.C.—Structural Steelwork | East Indian Railway Co. | Secretary, Company's Offices, Nicholas Lane, E.C. |
| „ 10 | Norway—Copper Plates and Brass Pipes | —— | Marineus Intendant, Horten, Norway. |
| „ 10 | Aberaman, Aberdare—Stores | Powell Duffryn Steam Coal Co., Ltd. | Stores Manager, Aberaman Offices, near Aberdare. |
| „ 14 | Edinburgh—Rails | Gas Commissioners | W. R. Herring, Chief Engineer, New Street Works, Edinburgh. |
| „ 15 | London, S.W.—Tramway Rails | London County Council | Engineer's Department, County Hall, Spring Gardens, S.W. |
| „ 15 | London, S.W.—Slot Rails, &c. | London County Council | Engineer's Department, County Hall, Spring Gardens. S.W. |
| | **PAINTING AND PLUMBING:** | | |
| Dec. 3 | Sligo, Ireland—Paint, Lead, Varnish, &c. | Harbour Commissioners | T. J. Mercer, Secretary, Harbour Office, Sligo. |
| „ 3 | London, E.C.—White Lead, &c. | Gt Indian Peninsula Railway Co. | Secretary, 48 Copthall Avenue, E.C. |
| „ 4 | Luddenden, near Halifax—Painting, &c. | —— | R. Horsfall & Son, 22A Commercial Street, Halifax. |
| „ 5 | London, E C.—Paints, Varnishes, Oils, &c. | Thames Conservancy | R. Phillipson, Secretary, Offices, Victoria Embankment, E.C |
| „ 7 | Dover—Paint, Oil, Glass, &c. | Harbour Board | W. Mowll, Register of Dover, Harbour Castle Street, Dover. |

# Complete List of Contracts Open —*continued.*

| DATE OF DELIVERY. | WORK TO BE EXECUTED. | FOR WHOM. | FROM WHOM FORMS OF TENDERS MAY BE OBTAINED. |
|---|---|---|---|
| | **PAINTING AND PLUMBING**—*cont.* | | |
| Dec. 7 | York—Lead, Oils, Glass, Brushes, &c. | North-Eastern Railway Co. | E. H. Clark, Stores, Gateshead. |
| " 8 | London, E.C.—Plumber's Materials, Lead, Paints, &c. | Corporation | City Surveyor, Guildhall E.C. |
| " 9 | Macclesfield—Paints and Oils | Corporation | Borough Engineer, Town Hall, Macclesfield. |
| " 14 | Lewisham, S.E.—Painting, &c., at the Workhouse | Guardians | H. C. Mott, Union Offices, 286 High Street, Lewisham, S.E. |
| | **ROADS AND CARTAGE:** | | |
| Dec. 3 | Wanstead—Paving | Urban District Council | C. H. Bressey, Council Offices, Wanstead. |
| " 3 | Southend-on-Sea—Tar Macadam | Corporation | E. J. Elford, Borough Surveyor, Southend-on-Sea. |
| " 3 | Chatham—Materials | Corporation | C. Day, Borough Surveyor, Town Hall, Chatham. |
| " 3 | Scarborough—Wood Block Paving | Town Council | H. W Smith, Borough Surveyor, Town Hall, Scarborough |
| " 3 | Norwich—Materials | Corporation | A. E. Collins, City Engineer, Guildhall, Norwich. |
| " 5 | Seaford, Sussex—Extension of Parade | Urban District Council | W. H. Pawson Clerk, 3 Clinton Place, Seaford, Sussex. |
| " 7 | Carshalton—Making-up | Urban District Council | W. W. Gale, Surveyor, High Street, Carshalton. |
| " 7 | Hoddesdon, Herts—Kerbing, &c. | Hertfordshire County Council | U. A. Smith, County Surveyor, Hatfield. |
| " 7 | Romford—Granite | Urban District Council | C. T. King, Clerk, Council Offices, Romford. |
| " 7 | York—Materials | North-Eastern Railway Co. | E. H. Clark, Stores, Gateshead. |
| " 8 | Leatherhead—Making-up | Urban District Council | T. Salkield, Surveyor, Council Offices, Leatherhead |
| " 8 | London, S.E.—Making-up | Deptford Borough Council | V. Orchard Clerk, Municipal Offices, 20 Tanner's Hill, Deptford, S.E. |
| " 9 | Fulham—Paving | —— | T. Wood, Borough Surveyor, Town Hall, Fulham S.W. |
| " 16 | Levenshulme, Lancs - Private Street Works | Urban District Council | J. Jepson, Surveyor, Guardian Chambers, Tiviot Dale, Stockport. |
| 1904.<br>Jan. 19 | Rotherhithe and Radcliffe—Carriageway | London County Council | Engineer's Department, County Hall, Spring Gardens S W. |
| | **SANITARY:** | | |
| Dec. 3 | Castletownbere, Ireland—Sewerage Works | Rural District Council | R. Evans, 53 South Mall, Cork. |
| " 3 | Southend-on-Sea—Sewers | Corporation | E. J Elford, Borough Surveyor, Southend-on-Sea. |
| " 3 | Trowbridge, Wilts—Sewers | Urban District Council | H. G. Nicholson-Lailey, Engineer, Town Hall, Trowbridge. |
| " 3 | Norwich—Stoneware Pipes, Gulleys, &c. | Corporation | A E. Collins, City Engineer, Guildhall, Norwich. |
| " 3 | New Hunstanton—Sewerage Works | Urban District Council | J. S. B. Glasier, Clerk, Council Offices, New Hunstanton. |
| " 4 | London, E.—Drainage Works | St. George's-in-the-East Guardians. | J. B. Brown, Clerk, Guardians Offices, Raine Street, Old Gravel Lane, E. |
| " 5 | Ivybridge, Devon—Removal of Refuse | Urban District Council | J. Ashford, Clerk, Council Offices, Ivybridge. |
| " 5 | Scalby, Yorks—Sewerage Works | Urban District Council | C. H. Gott, 9 Charles Street, Bradford. |
| " 7 | York—Drain Pipes | North Eastern Railway Co. | E. H. Clark, Stores, Gateshead |
| " 7 | Wednesfield—Sewers, &c. | Urban District Council | R E. W. Berrington, Bank Buildings, Wolverhampton. |
| " 8 | Quarry Bank, Staffs—Removal of Nightsoil &c. | Urban District Council | D. Sidaway, 57 Victoria Road, Quarry Bank, Staffs. |
| " 9 | Ayr—Sewers | Drainage Committee | A. Stevenson, 14 Cathcart Street, Ayr. |
| " 9 | Macclesfield—Drain Pipes and Disinfectants | Corporation | Borough Engineer, Town Hall Macclesfield. |
| " 9 | Wonersh, Surrey—Sewers, &c. | Hambledon R.D.C | E. L. Lunn, 36 High Street, Guildford. |
| " 11 | Newton, Scotland—Sewers, &c. | District Committee | W. L. Douglass, District Surveyor, District Offices, Hamilton. |
| | **TIMBER:** | | |
| Dec. 3 | Norwich—Timber | Corporation | A. E. Collins, City Engineer, Guildhall, Norwich. |
| " 3 | Sligo, Ireland—Timber | Harbour Commissioners | T. J. Mercer, Secretary, Harbour Office, Sligo. |
| " 5 | London, E.C.—Timber | Thames Conservancy | R. Phillipson, Secretary, Offices, Victoria Embankment, E.C. |
| " 7 | Dover Timber | Harbour Board | W. Mowll, Register of Dover Harbour, Castle Street, Dover. |
| " 8 | London, E.C.—Timber | Corporation | City Surveyor, Guildhall, E.C. |
| " 9 | Macclesfield—Timber | Corporation | Borough Engineer, Town Hall, Macclesfield. |
| " 10 | Aberaman, Aberdare—Timber | Powell Duffryn Steam Coal Co., Ltd. | Stores Manager, Aberaman Offices, near Aberdare. |
| 1904.<br>Jan. 15 | Cape Town—Timber | Government Rly. Department | Railway Stores, Cape Town. |
| Dec. 1 | Natal—Sleepers | Government of Natal | Agent-General for Natal, Natal Government Agency, 26 Victoria Street, Westminster. |

# List of Competitions Open.

| DATE OF DELIVERY. | DESIGNS REQUIRED. | AMOUNT OF PREMIUM. | DEPOSIT REQUIRED FOR CONDITIONS, &c. | BY WHOM ADVERTISED. |
|---|---|---|---|---|
| Dec. 7 | Elgin—School Buildings (340 pupils) | —— | —— | H. Stewart, Clerk, Landward School Board, Elgin. |
| " 7 | Selly Oak, near Birmingham—Public Baths | —— | £1 1s. | A. W. Cross, 23 Valentine Road, King's Heath, near Birmingham. |
| " 10 | Clare, Suffolk - Water Supply Scheme Advice | — | —— | J. Bigmore, Clerk, R D.C., 24 Queen Street, Haverhill, Suffolk. |
| " 16 | Lambeth, S.E.—Public Library | —— | —— | H. J. Smith, Clerk, Town Hall Kennington Green, S.E. |
| 1904<br>Jan. 15 | Windsor—Police and Fire Brigade Stations | £26 5s. | £1. | E. A. Stickland, Borough Surveyor, Town Council Offices, Windsor. |
| Feb. 1 | Erdington—New Council House & Free Library | £50, £30, £20. | £1 1s. | H. H. Humphries, District Engineer, Public Hall, Erdington, Birmingham. |
| Mar. 31 | Vienna—Machinery to Lift Boats on Canal | 100,000, 75,000 & 50,000 kronen. | —— | Austro-Hungarian Consulate-General, 22 Laurence Pountney Lane, E.C. |

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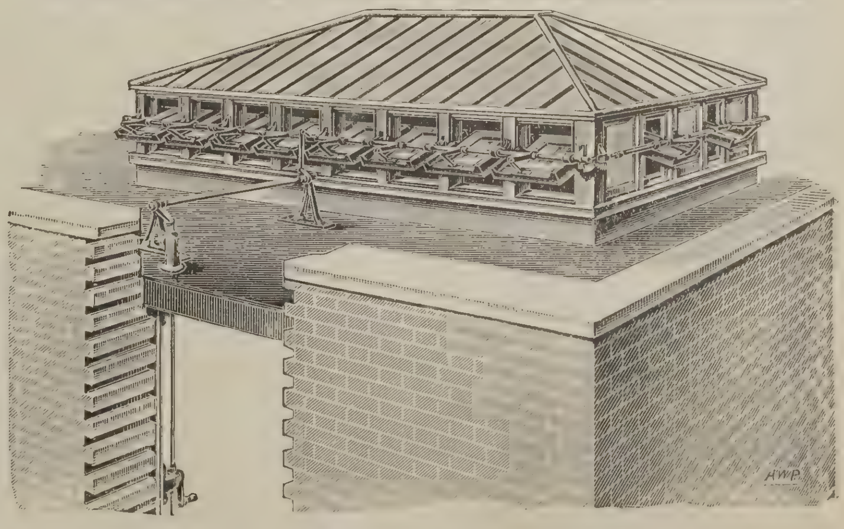

**Advertisement Aphorism for the Week.**

*Judicious advertising makes the prosperous business and keeps it prosperous.*

# Appointments Wanted.

*The charge for Advertisements under this heading is 1s. 6d. per insertion not exceeding four lines, and 6d. per line afterward, prepaid. Three insertions may be had for the price of two. Advertisements must reach the Office not later than 5 o'clock on Monday.*

ADVERTISER (33), a competent Surveyor and Draughtsman, with wide experience of construction and materials, offers his services temporarily for nominal salary in return for practise and expert instruction in quantity work. — Write "Practise," Builders' Journal Office, 6, Great New Street, Fetter Lane, E C.

AN ARCHITECT has TIME to ASSIST others with Working Drawings, Details, and Perspectives at own office. Special terms for Competitions. Good general experience—Apply, H. L. Fedden, 11, Hart Street, Bloomsbury.

AN ARCHITECT is willing to assist others with designing working drawings from rough sketches, details, furniture delapidations, and superintending works, &c., at own office.—Frank Catling, 3, Featherstone Buildings, Holborn, W.C.

ARCHITECT'S ASSISTANT, six years' experience, requires engagement. Contract drawings, details, &c. Surveying, assistance with quantities. Box 2635, Builders' Journal Office, 6, Great New St., Fetter Lane, E.C.

ARCHITECT'S ASSISTANT desires situation as IMPROVER in good Office; Country or Town; Home Counties preferred. Neat and careful draughtsman. Good references.—J. D., Cade House, West Malling, Kent.

ARCHITECT'S ASSISTANT (22½) desires engagement. Good draughtsman, well up in working drawings and details, and measuring up. Moderate salary.—Box 2645, Builders' Journal Office, 6, Great New Street, Fetter Lane, E.C.

ARCHITECT'S ASSISTANT (24) desires further experience in good office. London preferred. Accurate, varied experience, details, specifications, perspectives. knowledge of quantities, supply any references required.—Box 2652, Builders' Journal Office, 6, Great New Street, Fetter Lane, E.C.

ARCHITECT'S ASSISTANT (29) desires ENGAGEMENT; 10 years' experience; good draughtsman and colourist; well up in working drawings. details, surveying: good references; moderate salary.—A. Randall. Hazelmere, Rusham Road, Egham.

ARCHITECT'S ASSISTANT desires APPOINTMENT in London office; 5 years' varied experience (2½ years Technical School - practical work—and 2½ years articles); good draughtsman; knowledge of surveying; salary a secondary consideration; highest credentials, and undeniable references; life abstainer.—Box 2655, Builders' Journal Office, 6, Great New Street, Fetter Lane, E.C.

ARCHITECT'S and SURVEYOR'S ASSISTANT desires ENGAGEMENT; Midlands preferred; general experience (gentleman); moderate salary.—Apply Box 2643, Builders' Journal Office, 6, Great New Street, Fetter Lane, E.C.

ARCHITECT'S & SURVEYOR'S JUNIOR ASSISTANT desires Engagement (22½), 5½ years' experience. Working drawings, details and levelling. Salary moderate.—Box 2674, Builders' Journal Office, 6, Great New Street, Fetter Lane, E.C.

ARCHITECT'S JUNIOR ASSISTANT desires situation in a Birmingham office; 5½ years' good experience in well-known office. Contract, Plans, Specifications, Details, &c., good draughtsman.—Box 2668, Builders' Journal Office, 6, Great New Street, Fetter Lane, E.C.

ARCHITECT'S SENIOR ASSISTANT, with first-class experience, desires RE-ENGAGEMENT. Good draughtsman and colourist. Well up in design and details.—C. M. C., 31, Acton Lane, Harlesden, N.W.

A. R.I.B.A. with spare time desires to assist in the preparation of Architectural Drawings and Perspectives.—Apply Box 2630, Builders' Journal Office, 6, Great New Street, Fetter Lane, E.C.

BRICKWORK and POINTING WANTED by practical man. Rod or job. Good references. Distance no object.—Address, X. Y. Z., 133, Derby Road, Ilford, Essex.

BRICKWORK AND POINTING, &c., wanted; Scaffolding and Materials if wanted; good refs.—H. F. Meader, 39, Albert Road, Peckham, S.E.

BRICKWORK or POINTING WANTED by competent man. Any quantity, at most reasonable prices.—Apply W. S., Burlington Place, Woodford Wells, Essex.

BRICKWORK and POINTING WANTED, labour only, by practical experienced man, just finishing large job in East End.—E. M., 41, Sewardstone Road, Victoria Park.

CLERK OF WORKS seeks RE-ENGAGEMENT. Thoroughly practical in all trades. Experience in hospital and public building construction. First-class references and testimonials.—D., 9, Homefield Road, Chiswick.

CLERK OF WORKS, shortly disengaged. Finishing seaside hotel. Practical, reliable, conversant. Details, measurements. References.—P., 29, Smith Terrace, Chelsea, S.W.

CLERK OF WORKS, finishing up at a large West End Club, desires another Appointment. References and testimonials.—Address, Experience, c/o Mr. Croll, 39, New Park Road, Brixton Hill, S.W.

CONTRACTOR'S ASSISTANT with Architectural training desires engagement, or as Clerk of Works. Working drawings, details, quantities. Practical management of large contracts; 11 years' experience.—Box 2631, Builders' Journal Office, 6, Great New Street, Fetter Lane, E.C.

DRAUGHTSMAN (23) desires Engagement. First-class certificate (advanced) for Building Construction; also knowledge of Sanitary Engineering, quantities and detail drawings. Six years with leading Ventilating Engineers.—Address, F. W. B., 11, Whitbread Road, Brockley, London, S.E.

DRAUGHTSMAN. 6 years' experience. Desires evening work. Perspectives, inking-in Architect's drawings, and tracings.—P. R. Walker, 71, Aytoun Road, Brixton, S.W.

EMPLOYERS wanting LABOURERS, Mechanics, Handy Men, &c.—Kindly communicate with the Manager, Church Army Labour Bureau, 130, Edgware Road, W. Telephone 1,056, Paddington. No fees.

EVENING WORK desired by neat draughtsman in assisting Architects at office or at home. Terms by arrangement.—Apply W. C. A., 12, Clonmell Road, Fulham, S.W.

EVENING WORK required by a neat Draughtsman in assisting Architects, Surveyors, or Builders in preparing working drawings, details, tracings, specifications, or quantities.—Henry Phillips, Cottingham, Hull.

FOREMAN of Smiths, Fitters, Erectors, &c., DISENGAGED. Experienced in builder's general ironwork and steel structure. Fair draughtsman. Can estimate, and qualified to manage dept. Excellent testimonials.—G. H., 71, Ockenden Road, London, N.

GENERAL FOREMAN Disengaged wants job. Carpenter. Aged 46 Good references. Town or country. — H. W., 57, Chiswick Road, Lower Edmonton, N.

GENERAL FOREMAN, practical, working, seeks job with Builder. Steady and reliable; competent to carry out all classes of work. Trade, carpenter and joiner.—H. Hems, 7, Park Grove, Bromley, Kent.

MACHINIST, FOREMAN, seeks ENGAGEMENT (38). Used all kinds joiner's machinery, management of men, and works, set out from plans and rods. Take entire charge. Three and a half years' reference present employers; life experience.—J. S., 57, Sancroft Street, Kennington, S.E.

MACHINIST, JOINER, to take charge, or work spindle and tenoning. 22 years' experience. Country not objected to. Good refs.—H. K., 34, Cumberland Road, Walthamstow.

MACHINIST, young, wants job. Spindle, any planing machines and saw bench. Make cutters and sharp saws. Town or country.—Machinist, 18, Lausanne Road, Peckham, S.E.

MACHINIST (27) steady, wants JOB; over and under, thicknesser, rise and fall, bench, improver on four-cutter; Piano or Builder's Mill; 8½. Or could take Builder's Yard Foreman's Job. Good knowledge of materials.—Machinist, 28, Blackhorse Road, Walthamstow.

PAPERHANGER (Practical), day or piece work, fill up time painting. Town or Country.—W. Peters, 477, Woolwich Road, Charlton, S.E.

PLASTERER wants PIECEWORK. Labour only. Town or country. Good references. —T. S., 92, Seaford Road, Tottenham.

PLUMBER (Improver) wants Job, town or country; moderate wages for constant job. Good references.—L. Coe, 4, Lamont Road, Chelsea, S.W.

PLUMBERS' Work, Sanitary, Leadwork, Gas and Hot-water Fitting wanted by practical Plumber. Distance no object; references supplied.—Jefferson, 13, Warrender Road, Islington, N.

QUANTITY SURVEYOR wishes to arrange with Architects and Builders for preparation of Quantities, Estimates and Accounts, punctuality, accuracy and despatch guaranteed.—Address, Box 2667, Builders' Journal Office, 6, Great New Street, Fetter Lane, E.C.

SHOP FOREMAN of JOINERS seeks RE-ENGAGEMENT. Large experience in all kinds of joinery, good manager of men and machinery. Good references.—Address H. J. Branson, c/o Mr. G. Hack, 30, Shaftesbury Road, Watford.

SHOP or GENERAL FOREMAN seeks RE-ENGAGEMENT. Just completed several large shops in West End. Thoroughly practical, energetic, and reliable in all best class work. First-class refs. from best London firms.—G. Walker, No. 10, Sunnyside Road, Ealing.

TO LARGE EMPLOYERS OF LABOUR. THE NATIONAL ASSOCIATION for RESERVE SOLDIERS, 119, Victoria Street, S.W., tel. 367, Westminster, telegrams, "Employoos," London, supplies men of good character only, as Porters, Labourers, Caretakers, Carmen, Night Watchmen, Timekeepers, Carpenters, Masons, Bricklayers, Navvies, Handy Men, &c. Characters up to date. No fees. - Apply Secretary, as above.

TO BUILDERS and SPECULATORS, Wanted Joinery, Carcassing, Stairs (piecework), in large or small quantities. Lowest prices; any distance.—Reid, 91, Mill Hill Road, Acton.

WALKING or WORKING FOREMAN of PAINTERS seeks RE-ENGAGEMENT. Experienced manager. Accustomed to full control. Practical in artistic decorations. Good artist. Present situation 4 years.—State wages, "Foreman," 59a, Marlboro' Road, Bowes Park, N.

WORKING ELECTRICAL ENGINEER, of considerable experience, is open to ADVISE, get out quantities, and carry out any class of electrical work upon the most approved principles.—Boyle, 41, Devonshire Street, Islington.

YOUNG MAN seeks Sit. as Foreman for Builder and Contractor. Experience of all trades in building; good refs. from Architects.—Apply Box 2681. Builders' Journal Office, 6, Great New Street, Fetter Lane, E.C.

# Appointments Vacant.

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ARCHITECT'S MANAGING ASSISTANT required. Architect's assistants can add materially to their income in a legitimate manner, with little trouble and no pecuniary outlay.—Particulars, address Architect, c/o J. A. Sparling, Esq., 55, Chancery Lane, London, W.C.

LONDON REPRESENTATIVE, accustomed to call upon architects and well acquainted with the stone trade, WANTED by the Bath Stone Firms, Ltd. Apply, stating age, qualifications, experience, and salary required, to General Manager, Bath Stone Office, Bath.

WANTED. A Gentleman in London requires some lessons during the evening at his own residence, in taking off quantities and estimating, by an experienced estimating clerk.—Apply by letter W. W. c o Mr. Hall, 57, Denmark Hill, S.E.

WANTED BUILDER'S CLERK (single), to take sole charge of Builder's and Contractor's Office, must be thoroughly reliable in every department and with good references.—Apply to J. L. & H. Steer, Builders and Contractors, Clyst St. George, Topsham, Devon.

YOUNG ASSISTANT required for Architect's office, capable in Designs and Detail. Knowledge of Quantities preferred. Salary, £2 10s. per week.—Apply, stating age and experience to Box 2684, Builders' Journal Office, 6, Great New Street, Fetter Lane, E.C.

5 O'CLOCK P.M. MONDAY IS THE LATEST TIME FOR RECEIVING "WANT" ADVERTISEMENTS.
OFFICE: 6, GREAT NEW STREET, FETTER LANE, E.C.

# Coming Events.

**Wednesday, December 2.**

INSTITUTE OF SANITARY ENGINEERS.—Meetings of General Purposes and Finance Committee at 4.15 p.m. and Election Committee at 5.15 p.m. Sessional Meeting at 7 p.m. Mr. H. Harcourt Verden (Messrs. Davies & Verden, solicitors) on "Sanitary Law."

SOCIETY OF ARTS.—Sir Charles Malcolm Kennedy on "The Fiscal Problem," at 8 p.m.

NORTHERN ARCHITECTURAL ASSOCIATION.—Students' Evening.

ARCHITECTURAL ASSOCIATION (Discussion Section)—Mr. H. T. B. Spencer, A.R.I.B.A., on "Theatre Planning and Construction," at 7.30 p.m.

BUILDERS' FOREMEN AND CLERKS OF WORKS' INSTITUTION.—Ordinary Meeting of Members at 8 p.m

GEOLOGICAL SOCIETY—Meeting at 8 p.m.

ROYAL ARCHÆOLOGICAL INSTITUTION.—Meeting at 8 p.m.

**Thursday, December 3.**

LEEDS AND YORKSHIRE ARCHITECTURAL SOCIETY.—Mr. Edwin C. Wallis, A.I.E.E., on "Electrical Work as affecting Architects." Mr. G. Farrar on "Metal Casements." 6.30 p.m.

ROYAL SOCIETY—Ordinary meeting at 4.30 p.m.

SOCIETY OF ANTIQUARIES.—Meeting at 8 30 p.m.

CIVIL AND MECHANICAL ENGINEERS SOCIETY.—Mr. J. Bridges-Lee on "The Photographic Camera as an Instrument of Exploration, Record and Measurement," at 8 p.m.

CHEMICAL SOCIETY.—Mr. G. T. Moody on "The Atmospheric Corrosion of Zinc." Meeting at 8 p.m.

**Friday, December 4.**

ARCHITECTURAL ASSOCIATION.—Paper by the Camera and Cycling Club on "Photography for Architects," at 7.30 p.m.

JUNIOR INSTITUTION OF ENGINEERS.—Prof. D. S. Capper, M.I.C.E., on "Recent Developments in the Construction and Working of Gas Engines," at 8 p.m.

GLASGOW TECHNICAL COLLEGE ARCHITECTURAL CRAFTSMEN'S SOCIETY.—Prize Essay on "New Buildings in Glasgow and their Methods of Construction," at 8 p.m.

LONDON DIOCESAN CHURCH READING UNION.—Rev. E. McClure on "Recent Monumental Discoveries," in Trophy Room, St. Paul's Cathedral, at 2.45 p.m.

INSTITUTION OF CIVIL ENGINEERS (Students' meeting).—Mr. W. H. A. Robertson on "Artificial Draught, as Applied by Fans to Steam Boilers," at 8 p.m.

**Saturday, December 5.**

SANITARY INSTITUTE.—Provisional Sessional Meeting at the Town Hall, Leicester. Discussion on "The Collection, Disposal and Utilization of Town Refuse in Leicester," opened by Mr Frank W. Allen, A.M.I.C.E.

GLASGOW TECHNICAL COLLEGE SCIENTIFIC SOCIETY.—Mr. W. H. Booth on "Superheat." Meeting at 7 30 p.m.

**Monday, December 7.**

THE SURVEYORS' INSTITUTION.—Mr. Edward T. Scammell on "The Preservation of Timber, with Special Reference to its Protection from Dry Rot, and the Increase of its Usefulness for Estate Fencing and other Purposes," at 4 p.m.

SOCIETY OF ARTS (Cantor Lectures).—Mr. Bennett H. Brough on "The Mining of Non-metallic Minerals: III. Stone," 8 p.m.

**Wednesday, December 9.**

NORTHERN ARCHITECTURAL ASSOCIATION.—Mr. G. S. Aitken on "Bothwell Castle," at 7.30 p.m

SOCIETY OF ANTIQUARIES.—Ordinary Meeting at 8.30 p.m.

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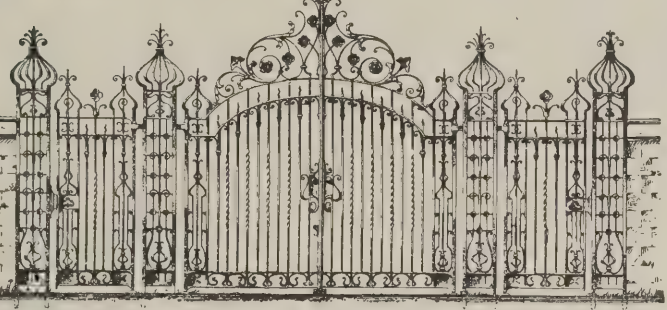

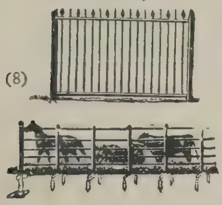

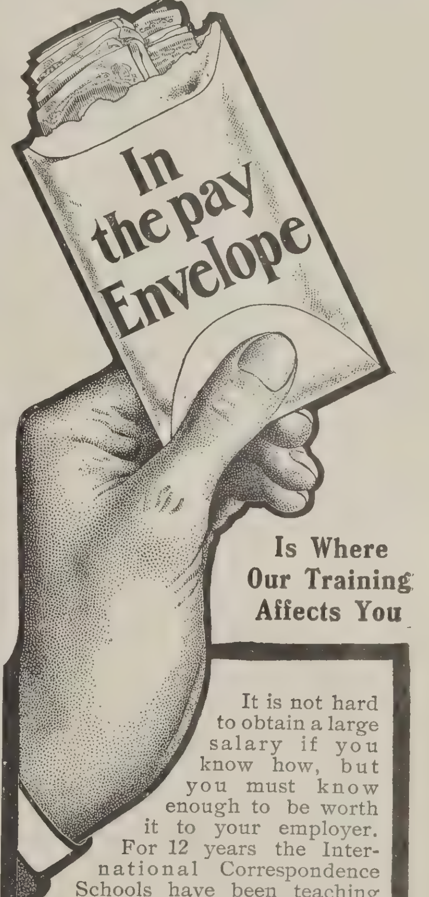

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| ☐ | Mechanical Draftsman | ☐ | Bridge Engineer |
| ☐ | Machine Designer | ☐ | Surveyor |
| ☐ | Electrical Engineer | ☐ | Mining Engineer |
| ☐ | Municipal Engineer | ☐ | Textile-Mill Supt. |
| ☐ | Heating and Vent. Eng. | ☐ | Textile Designer |
| ☐ | Contractor and Builder | ☐ | Architect |
| ☐ | Chemist | ☐ | Bookkeeper |
| ☐ | Sheet-Metal Draftsman | ☐ | Stenographer |
| ☐ | Sanitary Engineer | ☐ | Ad Writer |
| ☐ | Electrician | ☐ | To Speak French |
| ☐ | Steam Engineer | ☐ | To Speak German |
| ☐ | Marine Engineer | ☐ | To Speak Spanish |

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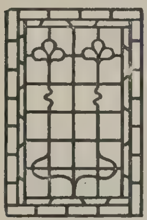

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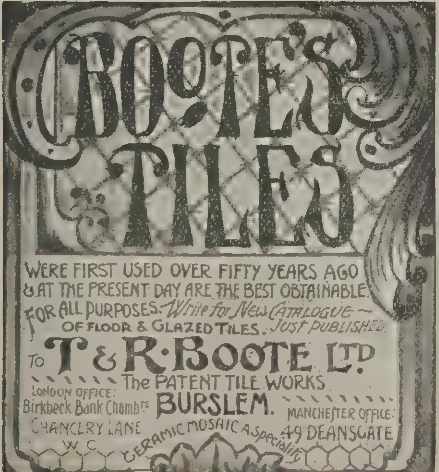

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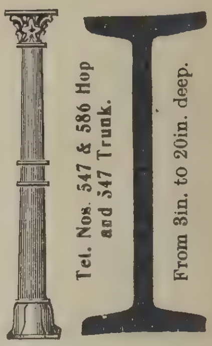

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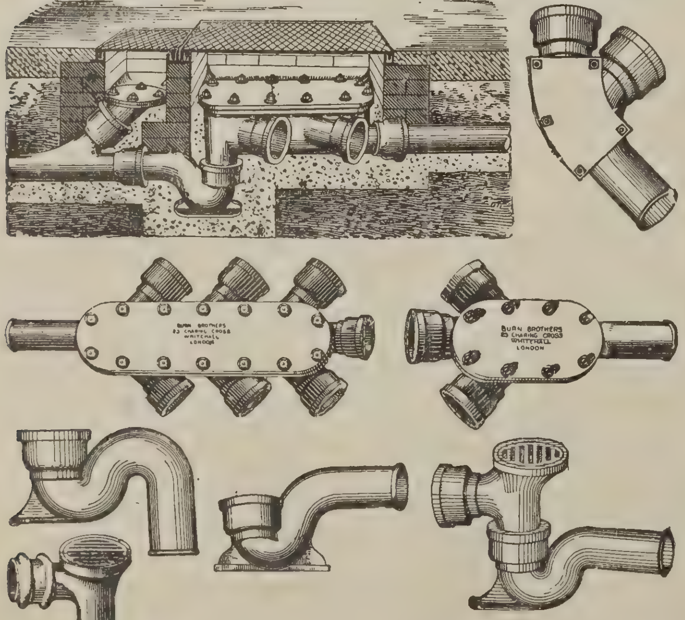

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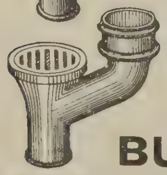

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THE

# BUILDERS' JOURNAL

AND ARCHITECTURAL RECORD.

December 9, 1903. Vol. 18, No. 461. 6, Great New Street, Fetter Lane, E.C.

## Summary.

The R.I.B.A. November examinations resulted as follows:—*Preliminary:* 171 candidates, 59 exempted, 87 passed, 25 relegated to their studies. *Intermediate:* 53 passed, 51 relegated. *Final:* 22 passed, 27 relegated. The failures were—in design, 19; mouldings, &c., 26; materials, 9; sanitation, 13; specifications, 8; construction—foundations, walls, &c., 10; construction—iron and steel, &c., 11. (Page 255.)

The roof of Toledo Cathedral has fallen in. (Page 254.)

Messrs. George Trollope & Sons and Messrs. Colls & Sons, two well-known London building firms, have amalgamated, with a share capital of £450,000. (Page 254.)

In a paper on English and American methods of building which he read before the Institute of Builders last week Mr. Charles Heathcote, F.R.I.B.A., said that Americans were keener on their work than we were, that American architects were more alive to the rapid completion of drawings and details, that the American valued more the power of work in his employees than the amount of the minimum wage, that his organization was better and he was more eager to find out and adopt good new ideas: but there was not the remotest claim that American buildings were better built than ours, while as to excellence of workmanship, some of the best brickwork in New York had been done by English bricklayers. Mr. Holloway, the well-known London contractor, gave the results of his visit to America, which were—that some of the methods over there were a little in advance of our own, but on the whole he was disappointed with what he saw. Their whole system of building was to be temporary, showy and lacking in stability. (Page 251.)

Serious cracks have appeared in the walls of Earlswood Asylum (erected half a century ago), caused by subsidences. A public appeal is being made for funds to enable the repairs to be undertaken. (Page 250.)

It is proposed to re-erect the original sixteenth-century oak screen behind the altar in Chichester Cathedral. This, after being mutilated, was removed in 1886. Some parts of it have disappeared, but sufficient remain to allow of its complete reconstruction, excepting the central portion, which was cut away in 1759. (Page 250.)

The Building By-laws Reform Association intend to approach the Local Government Board with the view of obtaining a new set of Model By-laws for rural districts; they also propose to draw up a set of draft building by-laws carrying out the recommendation of their committee that the by-laws should lay down principles embodied in the requirements of the schedule to the by-laws. (Page 256.)

Ferro-gallic sun-prints of tracings tend to fall to pieces after a time, so that the Authorities will only accept photographic reproductions on linen. (Page 246.)

**Photographs of Excavations.** ISOMETRIC projection has always been recognized as a very expedient means of representing buildings, for by means of it one is able to grasp at the same time both plan and elevation, position and form. In Prof. Lanciani's "New Tales of Old Rome" we find examples of what are, to all intents and purposes, isometric projections of the excavations in the Forum and other parts of the city, obtained by the aid of a camera operated from a balloon. The great benefits to be gained from getting a survey of the ground from a considerable height must be manifest to all. In fact it is the only real survey that enables one to see the salient features in their proper proportion and relation. Where extensive excavations are being conducted it would not mean a very elaborate business to make use of a captive balloon for the purpose of taking photographs. No area could show better than the Roman Forum the striking comprehensiveness of such a survey. The study of the topography of ancient Rome presents a new phase when one contemplates these aërial photographs, which show, almost at a glance, the streets, the houses, the monuments, the very nature of the ground. With such a series of photographs one could quickly learn the "anatomy" of large excavated sites like the Cretan palaces, which present such an intricate problem when they can only be studied by matter-of-fact plans in no way different from what would be prepared for a modern reconstruction of the buildings.

**Secret Commissions to Architects' Assistants.** A MATTER of secret commissions has been brought to our notice which, in the interest of the profession, needs to be made public. The following advertisement recently appeared in our columns: "Architect's Managing Assistant required. Architects' assistants can add materially to their income in a legitimate manner, with little trouble and no pecuniary outlay." Like many others, a certain assistant in a London architect's office wrote in reply to this advertisement, and received a very unusual letter in return. In this letter the advertiser stated himself to be acquainted with a well-known and fully-qualified London quantity surveyor, and suggested that the architect's assistant should endeavour "directly or indirectly" to get his principal to employ this particular quantity surveyor, "and for, say, a £10,000 job you would get about £20, part of it at once; and the architect whom you introduced would also effect a considerable saving." Now it is quite unnecessary for us to explain what this really means. The wording of the advertisement itself is deceptive, for the architect's managing assistant was not required, as might seem, in his ordinary capacity, but to secure this work on a secret commission. There is nothing illegal about the transaction, and the architect does not have to pay anything extra; but every self-respecting member of the profession will agree that such practices are underhand, and likely to lead to very unpleasant consequences, if not to fraud.

**Works Departments.** CONSIDERABLE discussion has been raised at Sheffield by the proposal to abolish the Works Construction Department of the Corporation. This proposal has been objected to especially by the workmen (whose mouthpiece has been the Sheffield and District Building Trades' Federation) on the ground that, under proper management, the Department would be of great service to the working classes. We do not doubt the truth of such a belief. There has been a Works Department in London, and we are sure it has always had the hearty support of most workmen who have been fortunate to be engaged under its authority: for, as a fact, the Department has done its work very thoroughly—its brickwork is most excellent—and it has not hurried, so that workmen have had good long employment, even though an outside contractor might have finished the work in half the time. But the experience is not limited to the L.C.C. The Borough Councils furnish remarkable examples of municipal expenses as compared with those of outside contractors: such, for instance, as some plastering at Battersea which cost 11s. a yard instead of 2s. But no matter: ratepayers are long-suffering. The difficulty in these little matters is to get at the truth. We are assured, from one source, that at Sheffield the Works Department has been a success and that its impending abolition is a plan to benefit certain employers: while, on the other side, it is stated that builders would not put in reasonable tenders for Corporation work because they were required to sign a contract which placed them at the mercy of the city surveyor, from whom there was no appeal. "But is the Works Construction Department a remedy for the difficulty? If so, then it is a very expensive remedy, and one is bound to feel that the cheapest and best way of removing any difficulty would have been to frame a contract such as would be fair to both the builder and the Corporation. Given a fair contract agreement, there is no need for the citizens to be saddled with such an expensive luxury as a Works Construction Department. It is absurd for anyone to think that such a department can execute work in competition with a private contractor under equal conditions." For our own part, we are generally in agreement with this view of the case.

# ARCHITECTURAL ASSOCIATION.

### Photography for Architects.

A MEETING of the Architectural Association was held on Friday evening last at 9, Conduit Street, W., the chair being occupied by Mr. Henry T. Hare, president.

Messrs. C. J. Stewart, B. H. Collcutt and P. G. Crawley were elected members of the Association. The following further donations to the New Premises Fund were announced :—

| | £ | s. | d. |
|---|---|---|---|
| C. F. Selby - - - - - - | 5 | 5 | 0 |
| H. W. Lonsdale - - - - - | 5 | 5 | 0 |
| W. C. Butterworth - - - - - | 3 | 3 | 0 |
| Geoffry Lucas - - - - - - | 2 | 2 | 0 |
| "L. F." - - - - - - - | 2 | 2 | 0 |
| J. W. Wyles - - - - - - | 2 | 2 | 0 |
| H. W. Braddock - - - - - | 1 | 1 | 0 |
| J. B. Gridley - - - - - - | 1 | 1 | 0 |
| A. S. Hewitt - - - - - - | 1 | 1 | 0 |
| H. A. Legg - - - - - - | 1 | 1 | 0 |
| E. F. Cobb - - - - - - | | 10 | 6 |

Mr. Francis R. Taylor then read a paper on "Photography for Architects," of which the following is a summary :—

Photography should not be considered as antagonistic to sketching. It has a utility in the education of the architect by producing an accurate delineation of old buildings unattainable by a sketch. It must not be forgotten that however valuable a sketch or measured drawing may be to the individual student who prepared it, there is the personal error to bear in mind when this method of delineation is applied for general study.

Photographs in conjunction with measured drawings undoubtedly form the best means for architectural study and research. It may be mentioned that in the Architectural Association Sketch-Book there are examples of measured drawings together with a photograph of the work. This method of illustration might be employed with advantage to a much larger extent. Whenever any old building of interest is to be pulled down to make way for modern improvements, or for other reasons, a set of measured drawings with a series of photographs form the best record of the old work.

Another use of photography as a means of illustration occurs in classes of instruction for architects when lantern slides are available; these enable all present to see, whereas diagrams and plates on the walls are only visible from certain parts of the room.

Lantern slides for architectural lectures should be made with a view to suitability of purpose. Photographs of buildings, both externally and internally, would be useful to illustrate the grouping and general effect, and then should follow photographs of towers and spires, of piers and arches, of caps and bases, of doors and windows, of vaulting, &c., to illustrate the treatment of the parts, and, lastly, of mouldings and ornament.

In illustrating constructive subjects the same principles should be adhered to—explanatory lantern slides to illustrate the manufacture and uses of the various materials, and then slides showing the different methods of construction.

The use of telephotography in the study of architecture is one which should receive careful consideration. In many instances parts of a building well worth studying are inaccessible for measuring; in these cases an ordinary photograph gives a general idea of the composition and a telephotograph the details.

### Reproduction of Drawings.

The utility of photography in the practice of architecture might receive far more attention than it does. In many instances the only use to which photography is put in architectural practice is in the reproduction of drawings by the ferro-gallic process. In this process the reproduced drawings are either on a thin paper or on a paper similar to Whatman's, and a black or brown line is obtained on a white ground. The advantage of the process is that the reproduced copies can be coloured similarly to an original drawing. A great saving of time is effected, because from one complete set of tracings any number of reproductions can be obtained. If the reproductions are to be kept for a considerable time, as in the case of copies for the Authorities, care must be taken in the selection of the paper owing to its tendency to fall to pieces after a time. For this reason the Authorities will only accept photographic reproductions on linen. The makers of the paper might consider the best means of surmounting this difficulty. It may be mentioned here that some of the papers shrink slightly in the process of obtaining the reproduction: this emphasizes the necessity for fully dimensioning all drawings.

The ferro-prussiate process with a white line on a blue ground is sometimes used, but as colouring is then out of the question it is not so suitable for general architectural work. Its use is limited to drawings where colouring is not essential, as, for instance, in details of steel construction.

Besides this special application, the use of photography in architectural practice is generally limited to what may be termed the legal phase of our profession, although a wider application would be a distinct gain. No one will deny that photographs of buildings about to be pulled down are valuable records, and in ancient light, easement, party structure and such like cases would always be useful on one side or the other.

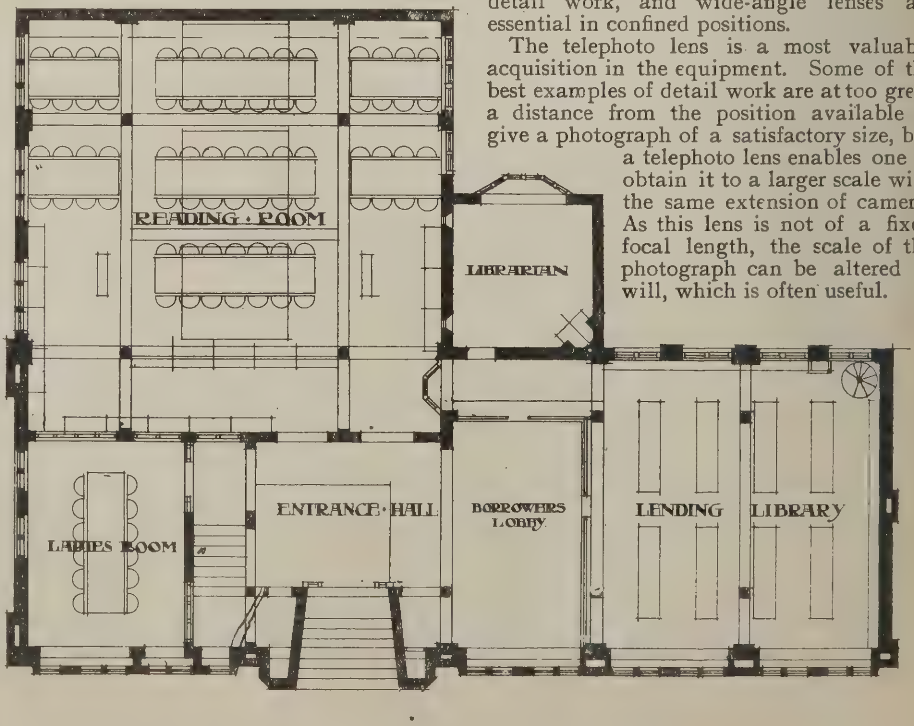
If the building happens to be one of considerable architectural interest, then the value of the record cannot be overrated.

### Records of Building Work.

Photographs of a building at its various stages of erection, with the dates and in some instances the time noted thereon, would be a valuable record of this class of work, and, in addition, would be very serviceable in the valuation of certificates. Engineers often adopt this method, with the best results, and there is no reason why architects should not do so.

Photographs of the finished building should in all cases be obtained, and a comparison made by showing the photograph side by side with the perspective drawing.

Photographs should be taken by oneself.



It is impossible for a professional photographer to know exactly what is wanted unless he happens to have made a thorough study of architecture, and we know that in the majority of cases he has simply a mere smattering of the requirements.

It might, of course, be urged that the professional photographer could do the work under our guidance, but it will be found that this method is expensive, and is, in reality, only applicable in those instances where selection of subject is not required to any great extent.

The architect who decides to use photography as an aid in his study and practice should understand certain of the technicalities. The questions which present themselves are:—What is the best camera for architectural work? What lenses should be used? What photographic plates and papers should be employed?

### The Camera.

Before anything can be done, the size of the camera must be decided upon. The ordinary sizes are: 4¼in. by 3¼in. (quarter-plate); 6½in. by 4¾in. (half-plate); 8½in. by 6½in. (whole-plate); 10in. by 8in.; and 12in. by 10in.

It is generally agreed that the larger sizes are the best for architectural work. But the larger the size the more expensive it will be. Besides this, the weight of the camera is a serious matter, especially as in the majority of cases the work would be done at a distance from home. For these reasons it may be conceded that the half-plate is the most serviceable. When lantern-slide work is contemplated, the quarter-plate is generally selected, as that is the most suitable size for the purpose.

If a good lens is employed, the quarter-plate size might be used for all work, as the photographs can be enlarged satisfactorily.

A camera for architectural work should have considerable rise and fall at the front, a good swing-back, long extension for long-focus and telephoto lenses, parallel or only slightly conical bellows (which prevent the cutting-off of the edges of the photograph when a short-focus lens is used), and at least three or, better, six double dark slides.

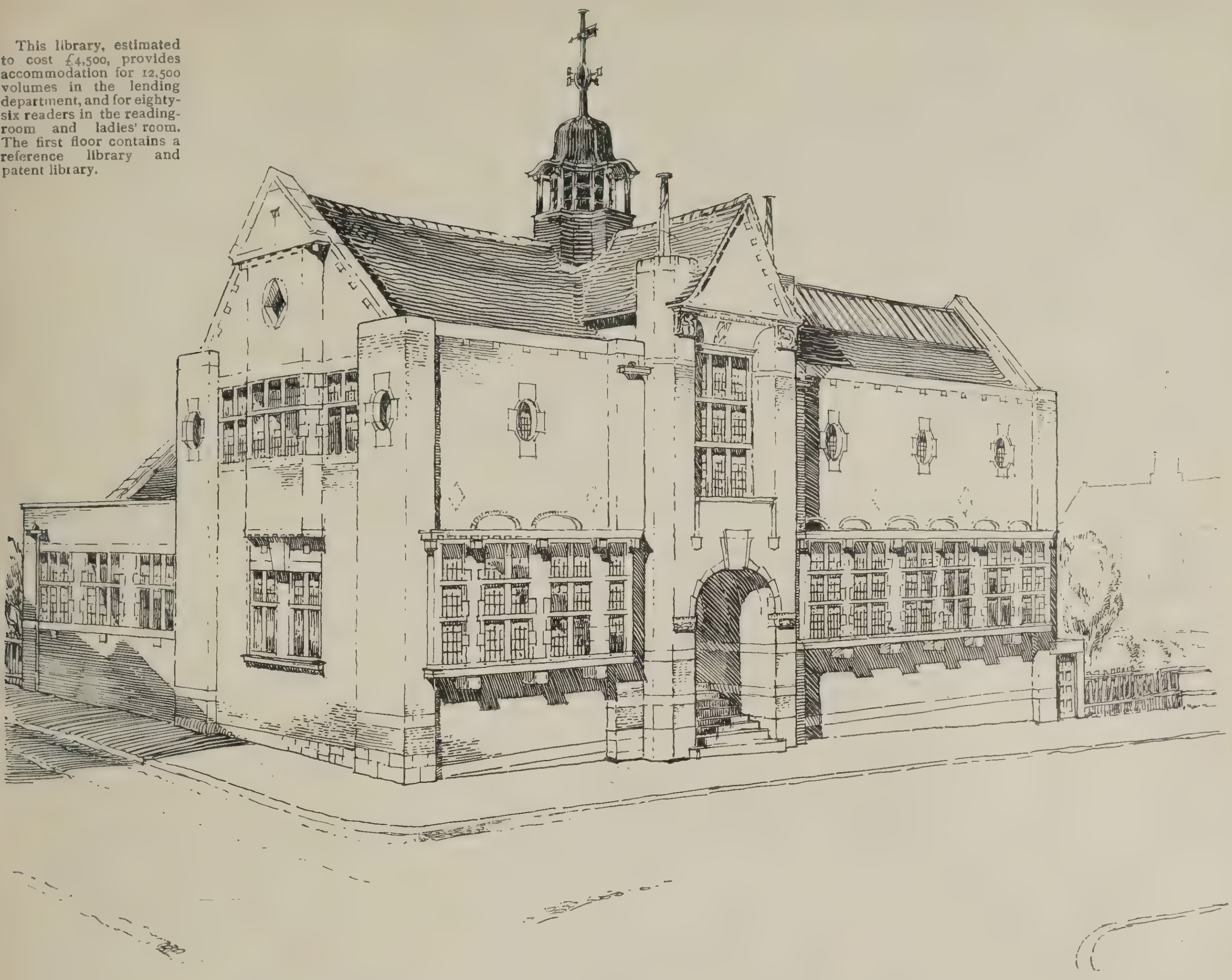
### Lenses, Plates and Papers.

As to lenses, it is best to have a set of different foci and of a good make. They should be of rectilinear type.

For average work the rapid rectilinear of about 7in. focus is most serviceable on a half-plate. Long-focus lenses are useful in detail work, and wide-angle lenses are essential in confined positions.

The telephoto lens is a most valuable acquisition in the equipment. Some of the best examples of detail work are at too great a distance from the position available to give a photograph of a satisfactory size, but a telephoto lens enables one to obtain it to a larger scale with the same extension of camera. As this lens is not of a fixed focal length, the scale of the photograph can be altered at will, which is often useful.

This library, estimated to cost £4,500, provides accommodation for 12,500 volumes in the lending department, and for eighty-six readers in the reading-room and ladies' room. The first floor contains a reference library and patent library.



DESIGN FOR A SMALL LIBRARY IN A COUNTRY TOWN. JAMES A. SWAN, ARCHITECT.

Ordinary plates of a good make are the best for architectural work, especially for interiors, although in dark interiors where very long exposures are requisite rapid plates may be used with advantage. Isochromatic plates are useful where the lighting of the interior is yellow. In interiors where the light from windows, &c., would be likely to cause halation it is necessary to use backed plates.

The development of the negative requires care on the part of the operator, but this question cannot be discussed now. It may be mentioned, however, that the architect-photographer should do his own development.

The chief printing processes are silver printing-out, platinotype, carbon and bromide; the decision as to which should be used depends upon circumstances.

A silver printing out process, such as the well-known P.O.P. of various makes, produces excellent results, but if permanent photographs are required platinotype or carbon processes should be used. For enlargements, bromide papers are most satisfactory.

### The Discussion.

Mr. Arnold Mitchell said a level should always be used on a camera. Mr. George Scamell advised the placing of a scale on the building, so that it might be reproduced in the photograph; he recommended a paper scale published by the Society of Antiquaries, price 6d. He always used a whole-plate camera himself. A pendulum level should be fixed on the back to enable the vertical lines to be accurately obtained. A camera for architectural work should have its lens fixed at the top of the front, not in the centre, as in nine cases out of ten this would avoid the front being raised. An ordinary stigmatic lens of three foci saved carrying several lenses. He had largely used Wellington Ward's stripping films, which saved much in weight and had practically no halation. "Ortol" was as good a developer as "pyro" and it did not stain the fingers. Starch paste should only be used for mounting. He thought it better to over-expose rather than under-expose. Mr. Hugh Stannus described a mirror reflector he had made for photographing ceilings, &c.; this consisted of a piece of mechanically-planed glass carefully silvered, and was placed at an angle of 45 degs. with the camera. Messrs. J D. Crace, E. W. Wonnacott and Henry T. Hare also spoke.

## Views and Reviews.

### Practical Plumbing.

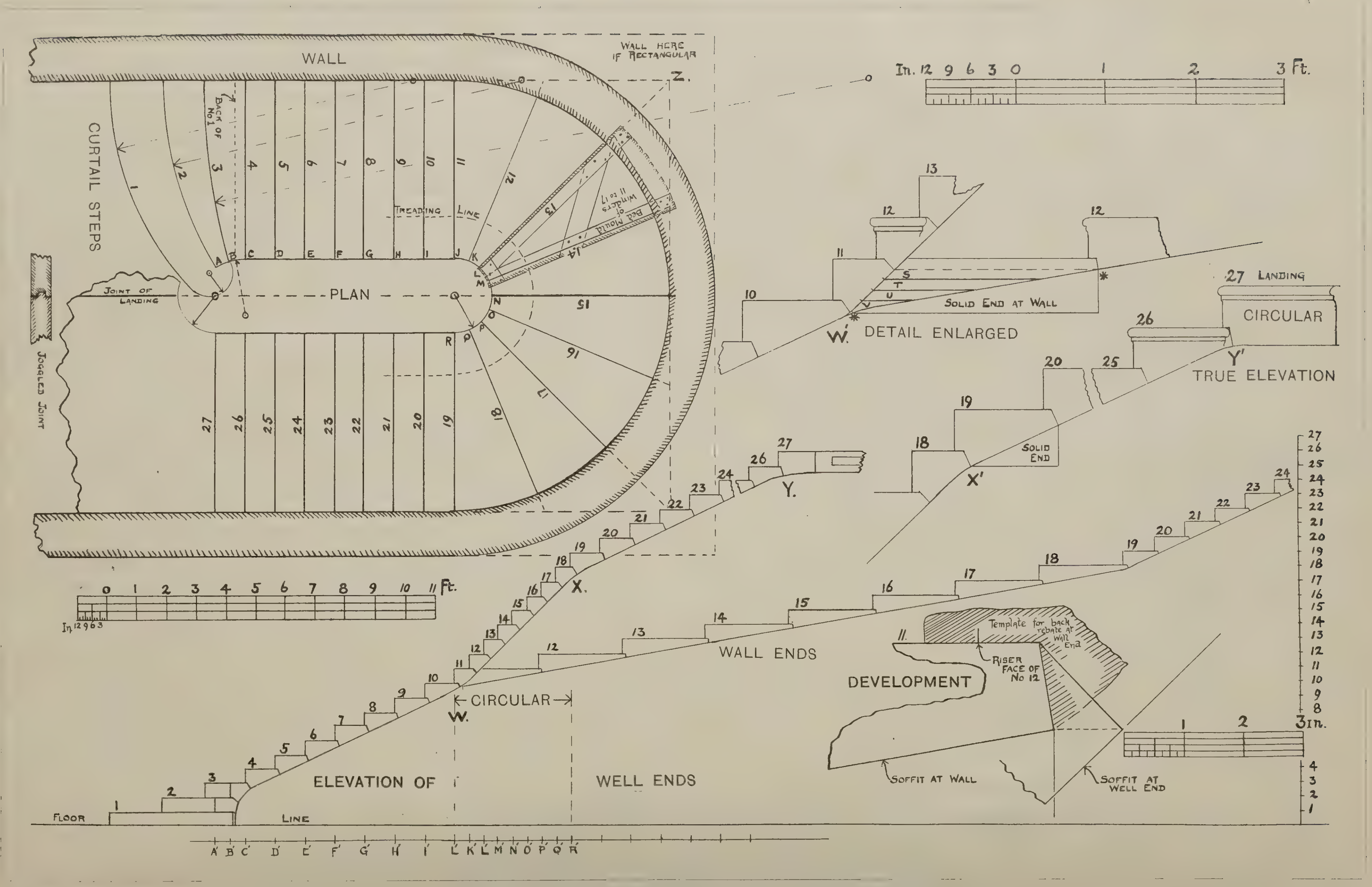
With the struggle for registering the plumber, much attention has been paid to his education, and the natural result has been to bring forth a plentiful crop of handbooks each claiming that all its predecessors have been on the wrong lines, or that they did not go far enough. The book under notice makes the special claim to provide in one cheap volume the elementary information upon science and materials which a plumber requires to know, but for which he generally has to purchase a separate book. We do not think, however, that the claim for a place is substantiated by the book. If it were cheap, complete and thorough, superior in all respects to previous books on the subject, we should welcome it; but as it is villainously printed and illustrated, falls into grievous errors on the scientific side, and is not so thorough as several other books, we can only wish it a peaceful sinking into oblivion. After all, plumbers are best taught by personal instruction, as in the classes at technical schools, and though books are useful to the teacher or the theoretician the workman seems never likely to purchase them, however cheap they may be. There are certain things which cannot be learnt from books - and plumbing is one of them.

"Technical Plumbing," by S. Barlow Bennett, R.P.C. Stockton-on-Tees: John Harrison, Britannia Works, Norton Road, price 2s. 6d. nett.

### Ironwork Design.

Prof. Henry Adams, whose contributions to any branch of knowledge are always welcome, has just published a fourth part of his series of pamphlets on "Designing Ironwork." In this pamphlet he deals with rolled steel joists, compound girders, concrete and fire-resisting materials; followed by calculations and working drawings for a fireproof floor. Altogether it is a masterly summary of all the available information bearing directly on the subject of fireproof-floor design, and it is put in such a simple way that anyone can read it and understand.

"Designing Ironwork. Second Series, Part IV.: General Data on Rolled Steel Joists, Compound Girders, Concrete and Fire-Resisting Materials; followed by calculations and working drawings for a fireproof floor.' By Henry Adams, M.I C E., M.I.M.E., F.S.I., Professor of Engineering at the City of London College, &c. London: E. & F. N. Spon, Ltd., 125, Strand, W.C., and the author, 60, Queen Victoria Street, E.C., price 2s post free.



SCIENTIFIC MASONRY: GEOMETRICAL STAIRS. BY JOHN WORNELL.

# SCIENTIFIC MASONRY–IV.

*(Continued from p. 178, No. 455.)*

### Geometrical Stairs.

By JOHN WORNELL.

GEOMETRICAL stairs are due to the well-hole being curvilinear and having continuous strings or handrail. The steps shown on the accompanying diagram are all housed at the wall end and left free at the open well end. The steps are made to set upon one another by joggled joints, called a back-rebate on the lower step and a bird's-mouth in the upper step.

It is not always necessary to set out the whole stair full-size on the drawing-board, but just the portions where the deviation takes place in the line of soffit.

As the plan of the wall is a semi-circle, the winders 12 to 17 are identical and can be used in either position.

When setting out the stairs on the board, at each end set up the height of rise and range the straight-edge between the points when necessary; ignore the moulded nosings, as these can be added later. The points of deviation W, X, Y are shown at $W^1$ $X^1$ $Y^1$ on a larger scale.

The development for well and wall end is laid out from $C_1$ to the right onwards.

The templet for the back-rebate at the wall end is shown shaded; the back-rebate at the well end is obtained by the application of a face mould at that position.

There is no difficulty whatever in working the twisted back-rebate, which is everywhere normal to the soffit, as the back arris on tread and extreme back arris are horizontal lines, and by the application of a short straight-edge from top to bottom arris the surface can be worked quite accurately.

The soffit of the winder is treated rather differently. Between the points * * on the soffit of No. 11 winder cut a zinc templet reverse. When the whole of the rough waste has been reduced, sink a draft until the reverse "which is curved on plan" fits exactly to the arris of the bird's-mouth and back-rebate. After having worked a draft on the outer end of the soffit, divide both drafts, as shown at S, T, U, V (for absolute accuracy they must be still further divided), and through these guiding points work the soffit of the step with the application of a straight-edge.

I have shown a skeleton bed-mould laying on No. 13. This has the nosed moulding and back-rebate and also 9in. wall hold at the solid end.

It must be understood that all steps have the solid end in the wall; this provides a horizontal seating and prevents the thrust on those below, which is the case when they are cut feather-edge for the sake of saving material and labour; this, however, is a bad practice and should not be allowed.

My drawing does not show all the steps with solid ends, but I think I have made this clear enough to be implied.

Landings when not obtainable in one stone are jointed with a he-and-she joggle, and are far better jointed; should there be the least unequal settlement the stone would break, whereas the he-and-she joint would give slightly.

Let the steps be equal at the treading line. In these days of lifts the mason rarely has to undertake the construction of winding staircases. Where quarter- or half-space landings can be introduced, use them in preference to winders, as they provide resting places which are wanting in the other.

I have also shown by dotted line a wall rectangular on plan, thereby illustrating the same treatment in setting out, and the steps would be exactly similar so far as they are obtained. I should develop the soffit exactly at the same line for the latter as I now show for the wall end, and having worked the grinding lines on soffit should continue the surface by the application of the straight-edge until the wall line was met; this would then cause the twisted back rebate at Z to be nearly vertical.

*(To be continued.)*

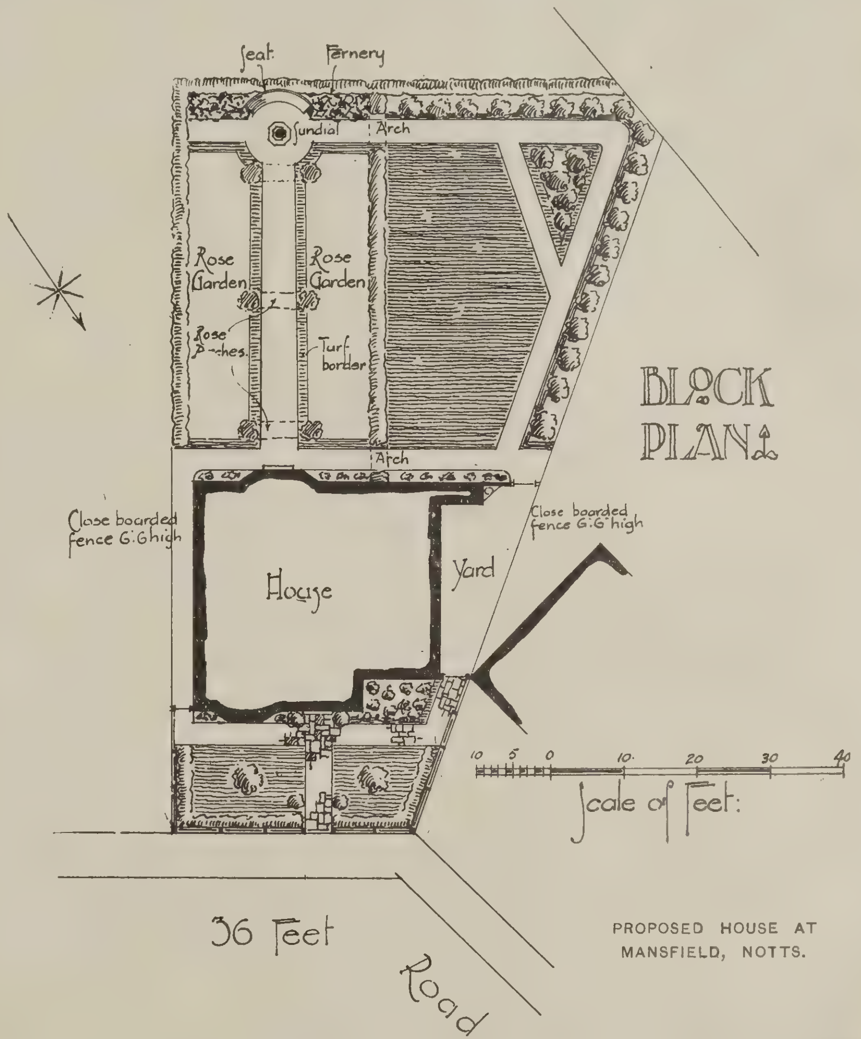
# Bricks and Mortar.

**Aphorism for the Week.**

*We . . . build Gothic contract-shams, because*
*Our deacons have discovered that it pays,*
*And pews sell better under vaulted roofs.*
LOWELL.

**Our Plates.** THE Union Bank of Australia in Cornhill was completed a considerable time ago. It is especially notable for the manner of its lighting, which is reflected on to the white ceiling from the suspended electric lamps.—The plans of the two small houses at Mansfield are interesting as an attempt to deal somewhat differently with the small house usually designed and erected by the speculative builder. As the site faces N.E. the principal living-room has been arranged at the back, and by avoiding the usual back addition and bringing the working rooms and yard to the side, the space in the rear is reserved, more completely than is usual, as a small garden for the tenant. The houses are being faced with thin Leicestershire sand-faced bricks with thick white mortar joints, and the roof is to be covered with thick light olive-green Welsh slates laid in diminishing courses. The purlin ends and exposed spars are in untreated oak, and the rest of the woodwork is painted white. The house is one of a number to be erected by Mr. A. F. Houfton, contractor, of Mansfield, to be let at about £28 to £30 per annum, and is being carried out to the designs and under the superintendence of Mr. Percy B. Houfton, architect, of Chesterfield.

**Liverpool Cathedral.** AT the last meeting of the R.I.B.A. Mr. William Woodward moved the following resolutions in regard to the Liverpool Cathedral Competition]: — (1) "That this meeting condemns the action of the assessors in giving the first place in the final competition to a set of drawings which did not comply with the essential condition of the competition." (2) "That this meeting views with the greatest disfavour the action of one of the assessors in allowing himself to be associated with the selected competitor in the carrying out of the work." The first resolution was not passed and the second was withdrawn by Mr. Woodward when it was explained that the committee virtually said to Mr. Bodley, "If you will not act with Mr. Scott, Mr. Scott shall not have the work of the cathedral." Mr. Scott said in a letter to Mr. Aston Webb that the conditions did not stipulate a central space large enough to seat 3,000 persons—that was merely a suggestion of the committee.



PROPOSED HOUSE AT MANSFIELD, NOTTS.

**Berwick Old Bridge.** AT a recent meeting of the Berwick Town Council the condition of Berwick Old Bridge was discussed. The borough surveyor reported that, while a new footpath was being laid, he had discovered a cavity behind the spandrel of one of the arches, causing the spandrel to bulge outwards. The same external conditions were visible at other arches. Mr. James Stevenson, architect, who had been called in to examine the bridge, reported that the parapet walls on the west side, which were 12in. thick, had no proper footings, these having been broken or worn away to a thickness of only about 3in., and part of the parapet walls were in a dangerous condition, and might give way at any time, with serious consequences. The main structure of the bridge, piers and arches, however, was safe. He recommended the taking down of the parapet walls carefully, and their rebuilding as at present after the footings had been put right. A long discussion ensued, in the course of which a councillor suggested that the present stone parapet should be replaced by a lighter iron trellis. Mr. Stevenson said by his scheme the old character of the bridge would be preserved, and he thought anyone with an understanding of the vandalism contained in the councillor's suggestion would do what they could to preserve the character of the bridge. Several motions were voted upon, and it was finally resolved that the services of an efficient bridge engineer should be called in to examine the bridge, the Works Committee being empowered to carry out any repairs suggested.

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**In Chichester Cathedral.** The committee appointed to consider the best form of memorial to Archdeacon Mount have decided to recommend the reerection of a screen in Chichester Cathedral, as being an object which the late archdeacon had greatly at heart. The following explanation of the proposed work, and the reasons for it, is given by the committee:—Early in the sixteenth century a very beautiful screen of carved oak, rich with gilding and colouring, was erected in Chichester Cathedral behind the high altar, so as to separate the choir from the retro-choir, or presbytery. The lapse of ages had dimmed almost to the point of effacement the colouring and gilding; and the closing of the open work of the upper part of the screen carried out about 1759 had rendered the lower part a mass of incongruity. In 1886, therefore, the late Canon Swainson proposed the removal of the screen altogether and the erection in its place of a stone and marble reredos to the altar. This was accordingly done and the central portion of the new reredos was erected. But when in position it was at once seen to be quite out of harmony with the architecture of the church, and also blocked out the view of the triforium of the retro-choir even more completely than the old screen in its boarded-up condition. Canon Swainson, therefore, made no further effort to complete the design, and the two side portions were never added, their places being filled by curtains. Some of the woodwork of the old screen has disappeared, but enough remains to allow of its complete reconstruction as it was originally erected, excepting the central portion, which was cut away in 1759. Even with regard to this, however, competent students of the woodcarving and architecture of the earlier period are able to supply, if not the actual reproduction of the old work, at any rate something which the original architect would have recognized as being in harmony with the rest of his original design; while as to the colouring and gilding, quite enough remains to enable even a comparatively unskilled person to realize where these were severally applied and what the colouring was in the various parts.

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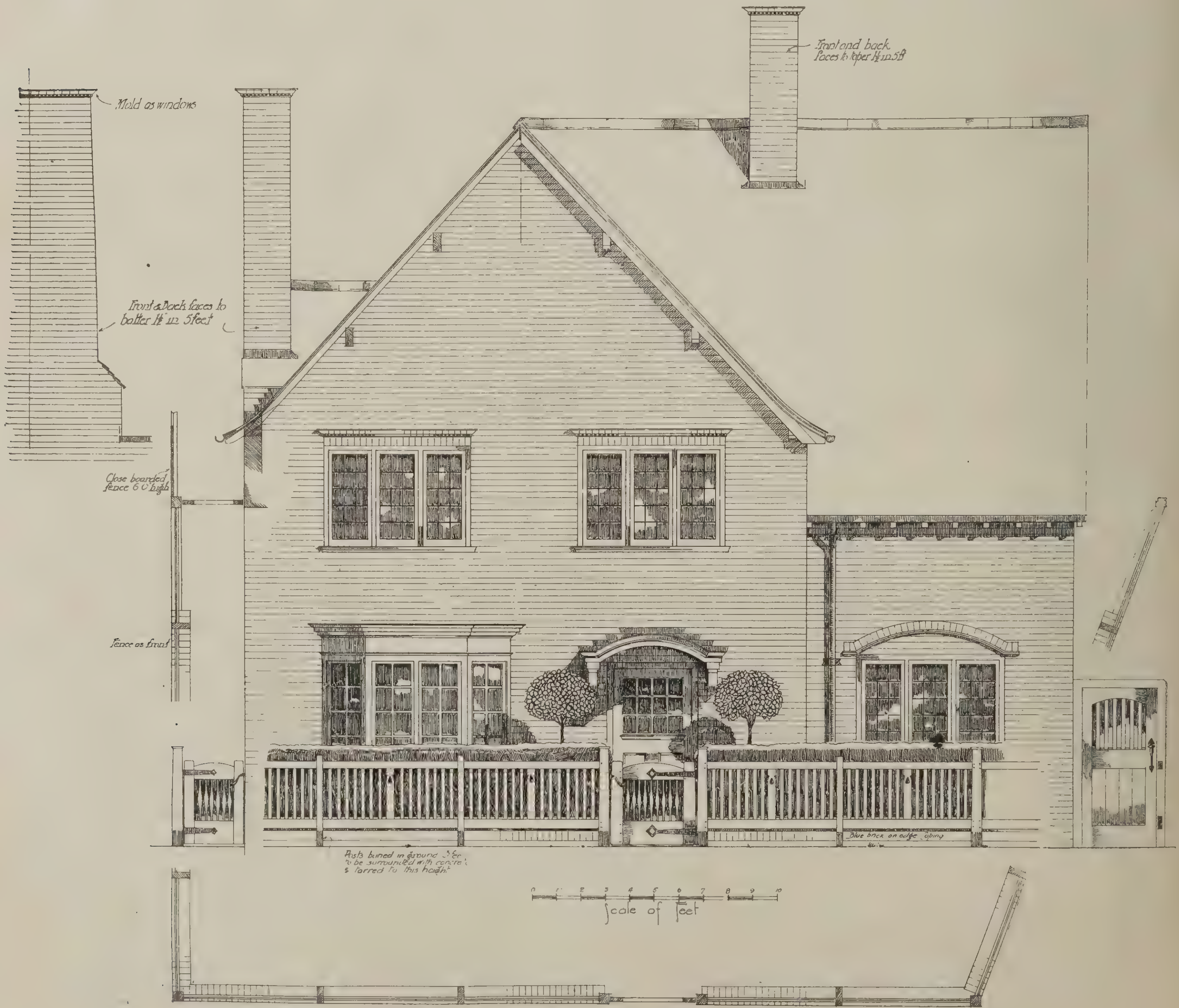
**Cracks at Earlswood Asylum.** For some time past cracks and fissures have appeared in the walls of the buildings at Earlswood Asylum (erected half a century ago), caused by subsidences due to general weakness of construction and the absence of sufficient foundations. These conditions becoming more and more serious, it was reported by the consulting architects, Messrs. Hesketh & Stokes, that underpinning throughout, together with the repair and strengthening of the roofs and walls, must be immediately undertaken. It was decided to invite the further opinion of Mr. E. A. Gruning, F.R.I.B.A., who, after a thorough examination, confirms in every particular the original report, stating that a very large outlay (which it is feared will not fall short of £25,000) will be required if the buildings are to be secured from destruction and rendered permanently safe. A public appeal is now being made to enable this most necessary work to be undertaken.


Mold as windows
Front and back faces to taper 1½ in 5ft
Front & Back faces to batter 1½ in 5feet
Close boarded fence 6 0 high
Fence as front
Posts buried in ground 3 fe to be surrounded with concrete & tarred to this height
Blue brick on edge coping
0 1 2 3 4 5 6 7 8 9 10
Scale of Feet

PROPOSED HOUSE AT MANSFIELD, NOTTS: DETAIL OF FRONT. PERCY B. HOUFTON, ARCHITECT.

## ENGLISH AND AMERICAN METHODS OF BUILDING.

AT the Society of Arts last week Mr. Charles Heathcote, F.R.I.B.A., of Manchester, read a paper before the Institute of Builders on “A Comparison of English and American Methods in the Erection of Buildings.” Mr. W. F. King, president of the Institute, was in the chair, and among those present were Messrs. H. H. and H. A. Bartlett (Perry & Co), Basil P. Ellis (Sir John Aird & Sons), Joseph Randall (Kirk & Randall), Henry Holloway and R. E. Holloway, (Holloway Brothers, Ltd.), Harry Smith (J. Smith & Sons, Ltd.), A. W. Turnbull (Turnbull & Son), C. Ansell, W. Hammond, Ernest J. Brown, Arthur Brown, E. J. Strange (Strange & Sons), T. Stirling (T. & J. H. Stirling), Henry and Frank Wall (H. Wall & Co.), J. Newson (S. Bird & Co.), W. F. Wallis, W. Sapcote, W. D. McInnes, H. Eckstein, J. Heathcote and S. B. Depree (Veronese, Ltd.).

A vote of thanks to the lecturer was moved by the president, who said, incidentally, that they would like to know something of American contractors' scaffolding and their haulage with lifts and cranes, which were quite different to those here.

### Mr. Holloway's Experiences.

Mr. Henry Holloway, in seconding the vote, said he had recently visited America to study methods on the spot. He quite agreed that we had something to learn from the Americans, whose methods were, in certain respects, a little in advance of our own, but on the whole the result of his investigations in the building trade were disappointing. Perhaps he had been led to expect too much; whatever else the Americans failed in, they did not fail in being able to speak well of themselves. They were of course quite the greatest people in the world; they were also quite the greatest braggarts. He had been much interested in American business methods by reading Mr. Fraser's book, and from conversation with Professor Gray, of America. He had already said what was the main opinion he received from his visit, but at the same time there were many things to admire. What struck him more than anything else was the energy, perseverance and courage of the American, who did not hesitate to tackle big schemes and run enormous risks in doing so; which was to be accounted for, in some measure, by the fact that in America there was not the disgrace attaching to failure as over here—a man came a cropper, but he started off again with as much delight and honour as before, and he found plenty of people to back him up. Visits from representatives of this country were welcomed most hospitably: indeed, the complaint was that we did not visit them enough. He was astonished at the splendid conditions of the metal trade in America—the steel work and its erection, the grillage work and small finishings, all most excellently done, reasonable in price and tasteful in design. Anyone in the metal trade here would learn more from it as existing in America than from any other branch of the building trade in that country. Their engineering work generally, including heating, electrical, ventilating and lifts, was worthy of our attention. But this was about all he could say for their methods. The whole system of their building was in effect to be showy, temporary and lacking in solidity. Their skyscrapers were architectural monstrosities, and he was very glad that the law did not allow them to be built here. As regards labour-saving machines, in most of the large centres, such as New York, Boston, Pittsburg and Chicago, he saw no machine that was better for our purpose than what was used in London; in some respects the Americans were behind us. It had been said that the trade unions over there did not resent the introduction of machinery, but that was not so in all trades. The existing working rules between employers and the stonemasons' union provided that at least five banker masons were to be employed to each machine. He emphasized how completely the detail drawings of every part of a building were furnished to the contractor before the work was undertaken. This was a great advantage in the speedy erection of buildings. Another advantage was the steel work itself, which could be obtained quickly and was usually ready before it was required on the building, being brought by the railway company and kept free of demurrage on a siding, whence it could be delivered as required. In many cases the steel work was designed by the contractor, who kept a special staff of engineers for that purpose, besides which he had representatives at the centres where the steel was rolled, and these representatives went in and about the works to see that the work was properly prepared. Confirming Mr. Heathcote's experience as to some of the best work in America being of English manufacture, Mr. Holloway referred to the glazed brickwork in one of the biggest hotels in New York; it was most excellent; and it came from Leeds! Without doubt speed was sacrificed to everything; so that in a Boston building he saw the basement walls were lined with glazed brick, without bond—in fact put up like tiles; a practice which did not conduce to solidity in construction. Speaking of the number of bricks laid per man per day, he had found as many as 1,600 and 1,800 so laid in America, but it should be remembered that the bricks were smaller (8in. by 4in. by 2¼in.) and more easily handled than our stock bricks. The extra speed was secured by bribing the men with increasingly high wages. This could not continue indefinitely. The men had now 2s. 3d. an hour and the masters were not prepared to go any higher, with the result that the number of bricks laid was gradually diminishing. When Professor Gray was in this country he (Mr. Holloway) took a record of the work done on an ordinary job with 18in. and 14in. walls with the usual facings, and he found that the number varied from 900 to 500 bricks in a day of nine hours, the average being slightly under 700, while on another exceptional job the average was 1,400 a day; so that our men were not far behind the Americans in the quantity turned out, while in regard to quality the American work was inferior, exhibiting very little finish. The scaffolding used in America was very different from our own. There was no outside scaffolding. The steel work was run up ahead of the masonry and other work, and the hoisting done by a boom jib crane, worked by a steam drum crab in the basement; also by a fast-running steam-power hoist worked on the lift principle. The walls were built from scaffolding supported on wood struts put out of the windows, and when it was required to reach between the windows trestles were used. It was practically a painters' scaffold, and the men ran great risks As to superintendence, he found that many firms employed as general foremen young men with a university training, but with little knowledge of practical work, and it was their duty to hustle the sub-contractors. The general contractor usually sub-let the whole of the work in sections to sub-contractors; he had no works himself and only a small staff, a fact which did not make for good building, however profitable it might be; while even the sub-contracts were again divided—in joinery, for example, one man making nothing but doors and another nothing but windows.

Mr. Bartlett spoke of the manner in which the steel work of buildings was completely finished at the works, even to the last rivet, so that when brought on the building it could be erected without delay; whereas with us it was almost the universal custom to let builders go on with their work and to supply the details as they required them; but if a contractor knew from the beginning exactly what he was going to put in a building he could make preparations for it, and so could expedite the work. Still he did not say that ours was not the better way, for after all slow building meant lasting building, which was the end to secure.

Mr. Heathcote, in replying, said it was clear that if a man wanted to build more speedily he would have to pay more: and that was a principle found in practice to be economical, as it made a more profitable use of capital which would otherwise be lying idle. We, however, could do things quickly. Mr. George Westinghouse, whose authority was unquestionable, had said that the steel work in his new works at Manchester was the most beautiful he had ever seen; and this was done by Messrs. Dorman, Long & Co. at the rate of more than 100 tons per day. Quick building could only be got by using steel work, and it was imperative that we should alter our by-laws to conform with the new construction. This had been done in Manchester, where walls with steel skeletons might be made thinner than ordinary walls, but the London County Council would not permit such construction in the new hotel proposed to be built on Piccadilly. We needed to “speed up” in our work and the position to secure was the happy medium between English and American methods.

The following is

### Mr. Heathcote's Paper

in full:—

We have met together this evening to consider, in comparison with our own, the methods adopted by our cousins across the water in the erection of buildings, and to gather therefrom anything useful to ourselves.

I am not dealing closely with the constructional designing of buildings, although that has considerable bearing upon our subject, but with the methods adopted by the erectors of the work.

In any references to “English or “American” it must, please, be distinctly borne in mind they are not personal but are solely made in general terms of either as a nation. As in architecture or in sculpture when we refer to the beauties and skill of the ancient Greeks we do not imply there were no instances of bad art produced by them in the same era, so when speaking of the pushfulness of the American it is not to infer it a universal possession, or, on the other hand, to imply that all Englishmen lack great energy, which would be ridiculous. I speak of each only as a body—as a nation.

Interest in our subject has been largely increased by recent reports, comments and advertisements in the Press. It does us no harm to be stirred up and made to examine our methods of work.

It is a healthy exercise, and if the advent of Americans into our local business enterprises universally results in this, their coming is not to be regretted. But, in the Press or elsewhere, only one superiority in building matters has been claimed by or for the Americans: the claim of speed. In the most picturesque of the Press comments no claim has been put forth for better work, better finish, less settlement of walls, less cost, or any other advantage over the English contractor, than the one of acceleration of speed in the erection of the work. It is an important claim, however. Is it a just one? In my opinion it is only qualified by the remark that, all other things being equal, it has been an exaggerated claim.

What are the methods adopted by the Americans which are not in general vogue with English contractors whereby this acceleration is obtained? Several factors are necessary, and in a parenthesis it may be added that there are many Englishmen possessing every one of them, who have worked with them in full play, achieving much, although, like Englishmen, they have done so quietly, quite oblivious of the fact that they were doing anything deserving special comment or in any way out of an ordinary quick, bright, business life. But my point is that these speeding-up qualifications are not as widespread amongst us as with the Americans. Again cautioning you I am only referring generally and not individually, let me come to the "practical politics" and give you a summary of these factors of successful rate and progress.

### The American is:

(1) More keen upon his work than we are. Of him it cannot be said, as of some Englishmen, that his business occupies his spare time. It is more true of him than of us that business comes first and pleasure afterwards.

(2) The American architect is more generally alive to rapid completion of the drawings and details of the approved scheme, in order to enable the contractor to know at the start virtually the whole of what he has to do.

He also, if the work permits it to be introduced, schemes his construction in such a manner that quick speed is attainable. Coupling-up steel stanchions tends to more rapid progress than endeavouring to provide polished granite from a Scotch quarry in winter.

(3) Based on being provided with the drawings, the contractor is enabled to perfectly organize his work. Every contractor here will know the extreme benefit and help this is to him, and would appreciate being always provided early with full settled information, clear and definite.

(4) This is one of the principal factors, if indeed it be not the principal one. Why should American architects work early and late, employing wider assistance to enable them to complete their drawings and instructions rapidly? Why should the American contractor spend much more on superintendence, on labour, on overtime, on earlier delivery of material? They do it because the American proprietor, more fully appreciative of the fact that the rapid building of his works means money to him, is willing to pay the necessary additional expense such services involve. It is a pecuniary advantage to him, and he does not hesitate to pay in order to gain it. By his paying for it the costs of the acceleration are met, and the incentive is provided for greater exertion on everyone's part.

### Maximum Output and Wages.

(5) The American values more the power of work in his employees than the amount of the minimum wage, and to save time will more eagerly seek the latest hoisting and other machinery. The attitude of the working man is also in his favour. An American workman seems to recognize that the more cheaply an article can be produced through economizing labour the more the trade as a whole will be benefited, and as a natural result the labouring classes must be also. I have seen the matter expressed thus: "We know we are the gainers in the end if a new machine is introduced which does the work of ten men by the help of one. American employers always pay better wages to the men employed in their labour-saving machinery, and this has a tendency to advance wages all round, and find more and more employment."

On the other hand, it seems to be the deliberate policy of some trade unions in our country to compel their members to do as little work as will pass muster. This is a hard saying, but letters to this effect in the "Times" failed in getting any denial from the union leaders. I should like to know this was a mistaken impression. The policy referred to does not obtain, however, so much in the provinces at the present time as it did five years ago.

In this summary you have the whole matter. It is application and devotion to work, with profit as the incentive and reward.

Let us deal with these factors in greater detail, and not be too conservative, too splendidly isolated, too sensitive, too fond of "commercial repose," to benefit from them.

An American is keenly alive to the necessity of work, thought, application in his business. The American air seems to exert upon him a stimulus to new exertions and fresh enterprise. Add to this the great incentive of self-interest in the object to be attained, and you have the most potent of causes working in him. These direct him to the provision of everything to save time. Anything tending in this direction is worthy of his consideration.

### An American's Education.

It saves time, for instance, to commence business education early. The system of education of the youth of America is founded more with the object of the ultimate business life than ours. It is of more importance to know the history and to study the causes of American industrial progress than to be imbued with the knowledge of a dead language. The American university takes more the direction of a technical institute than it resembles our ideas of higher education. A youth is expected and directed to go through this course, which is a considerable portion of his actual business training. In his early manhood he is being properly fitted for his career, and his interest is thus bent towards his business pursuit. He has every opportunity for being trained in the right direction. Technical education implies in teaching some concern for the practical prospects of those taught. Practical experience goes with the theoretical. An American, by a common-sense education, does not enter upon his trade with a suspicion that he is demeaning himself. Hopeful enterprise is the spirit in which he begins; he believes in the thing he has to do, and is proud of it. Can it be said that this is the general drift of our higher educational systems at present?

### Protection.

It must be remembered America is a huge new country, and for a century there have necessarily been continually new developments, widening industries to meet the needs of an increasing population still further enlarged by constant immigration, and consequent urgent demands in ordinary times for labour and material of every kind in building operations. These young industries were fostered by Protection. The price of the nation's manufactures and the wages of the people continually increased. The cost of home productions being thus generally enhanced, the absolute necessity arose for seeking and adopting every feasible method for the reduction of that cost if trade were to be increased at home, and still more if there were to be any weighty business in exporting manufactured articles to a country where Free Trade at any rate kept down their cost. Necessity was again the mother of invention. The natural outcome with an energetic people was the introduction of labour-saving machinery. For this competition labour-saving machinery was not the only thing needed, but improvement in the manufactured article where such could be obtained. The necessity found the incentive and motif, without which nothing important will be done. Similar results follow here where necessity has driven home the incentive. For the moment some of our trades have been overtaken, but in many, all efforts have been in vain to exceed the excellence of our manufactures. Great Britain is still easily first in certain textiles and textile machinery No other country can approach the productions of Lancashire and Yorkshire. Recent indiscriminate eulogies of almost everything foreign compared with our own work and methods have given a very erroneous impression. It has become the fashion to so depreciate ourselves that people are beginning to believe it. An American, on the other hand, makes a point of praising his own country on every possible opportunity. We seem almost eager to belittle the industrial efforts of our island. We are unjust to ourselves. Our carpets, our cotton, our cloth, the precision of our machinery, our shipbuilding, our pottery, cutlery, are still unbeaten. Abroad our goods hold their own in quality and in finish, although in some directions there is certainly great need for new ideas and improvements in design. When staying at one of the largest modern hotels in New York I was much struck with the beautiful finish of the bath and lavatory appointments and general plumbing work. Being naturally desirous of gathering information wherever possible, I asked for the name and address of the firm who did the work, intending whilst in America to visit their establishment to see their goods. The whole hotel, it turned out, had been fitted up by a London firm. If this had been reversed every newspaper in England would probably have contained an article upon American enterprise, with gushing accounts (possibly paid for) about the decadence of the sleepy English sanitary engineer before the young American invader. Gentlemen, in matters of self-advertizing we are as babes in the wood compared with our cousins. This system of pushfulness, at all events, is totally opposed alike to the sentiment of Englishmen and of the better class of Americans.

### The Incentive.

I have named Incentive as the lever for real progress. It has not been very strong with us. The supremacy of our old country for many years in manufactures, industries and wealth seems to have induced in us the habit of thought that we were by nature and a good Providence the only possible first, that our very success indicated there could hardly be room for improvement, that what was good enough for our fathers and made their fortunes was good enough for us, who were doing very well, and there was no apparent need for strenuous endeavours for other methods, increased knowledge, new markets. But for those wishing to compete with us, and to effectively attack our position, an opposite state of things obtained. Their necessity, circumstances and environment have called forth increase of energy and application, whilst we have been in many ways generally content to remain as of old, having formed our habit of believing we were unassailable as the workshop of the world. But this is quickly changing.

The working force does not appear to be a matter of race at all. A Britisher going to the States soon adopts the quicker actions of the country and overcomes the conservatism of his old ways. The best brickwork in New York, for instance, has been done by English bricklayers.

There is no one definite reason that can be given for this quickening of activity. The work is done under a different organization, and follows methods of economizing human labour. These combined, when acting in conjunction with exactly similar machinery to ours, produce a greater result. And the workman himself recognizes this.

### Methods Ahead of Ours.

Americans have several methods ahead of ours, but in other ways they have as much to learn from us as to teach. There is this great difference, as I have been endeavouring to show—the greater desire to learn, and to take advantage of what they see to effect improvements in their work and methods.

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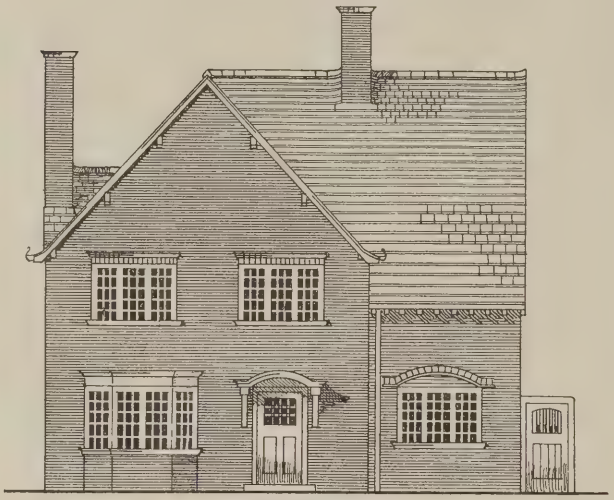
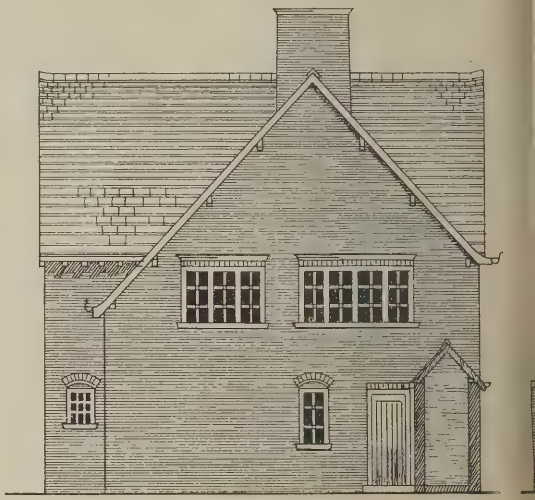
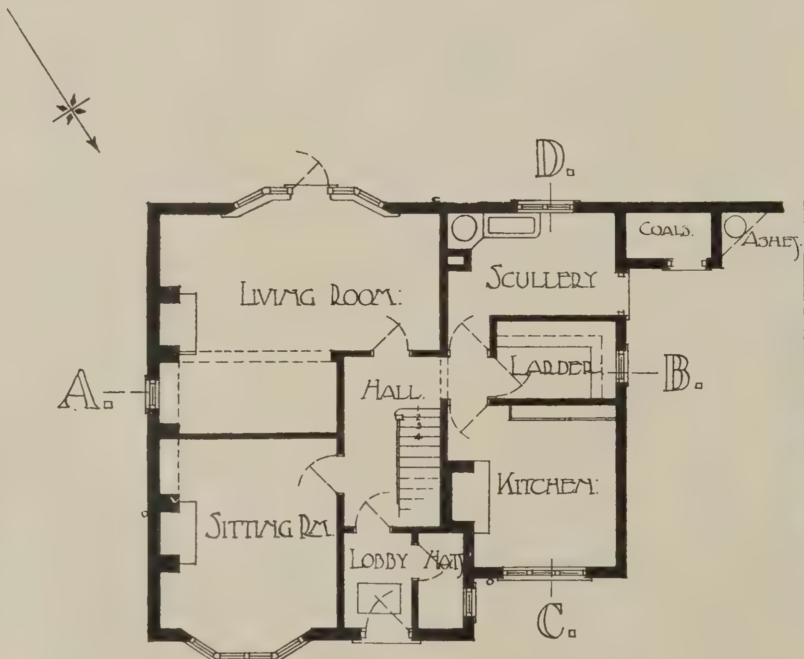
The Builders' Journal and Architectural Record,
*Wednesday, December 9th*, 1903.

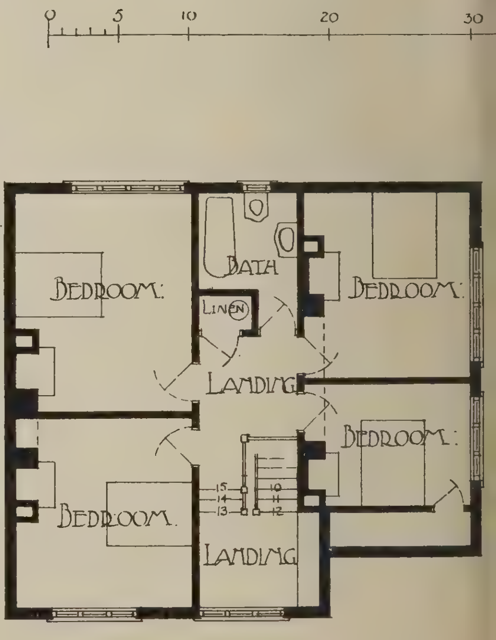


FRONT ELEVATION.



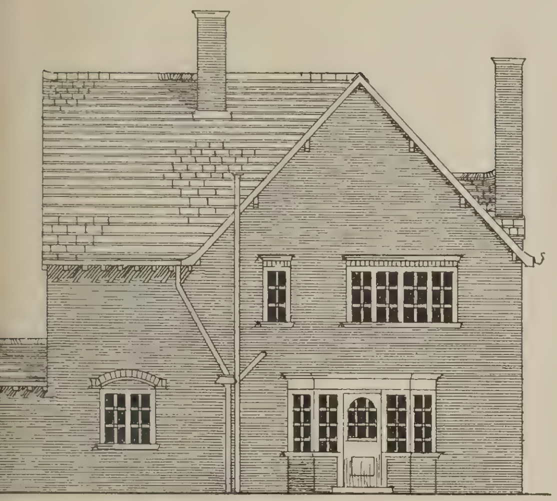


GROUND-FLOOR PLAN.



FIRST-FLOOR PLAN.

Proposed House at Mansfield, Nott



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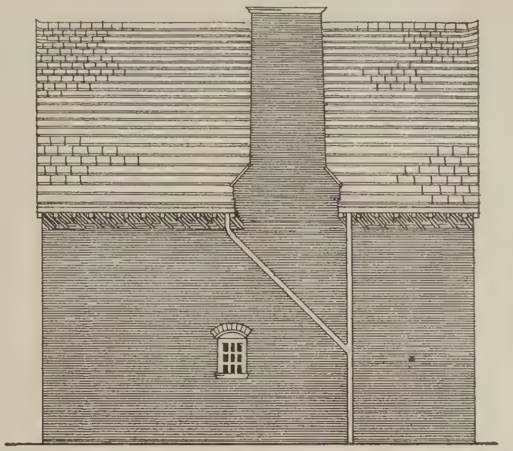

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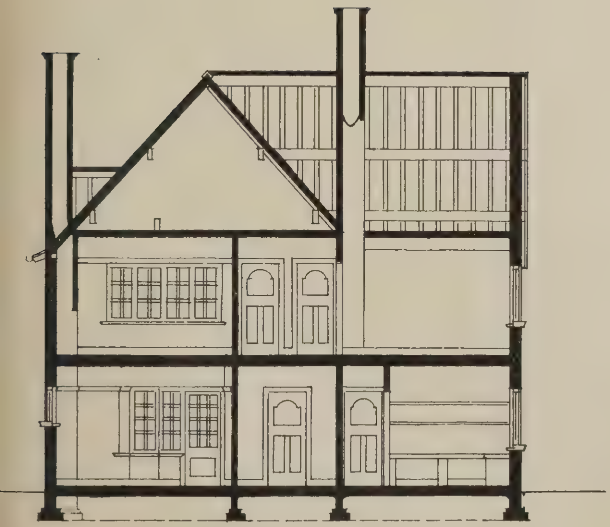

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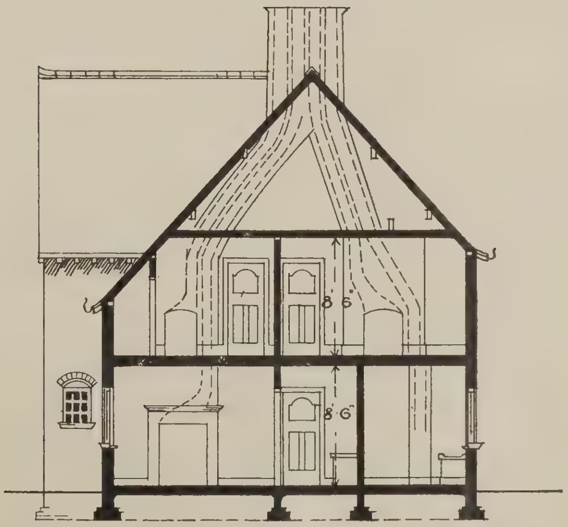

SECTION ON C—D.

PERCY B. HOUFTON, ARCHITECT.

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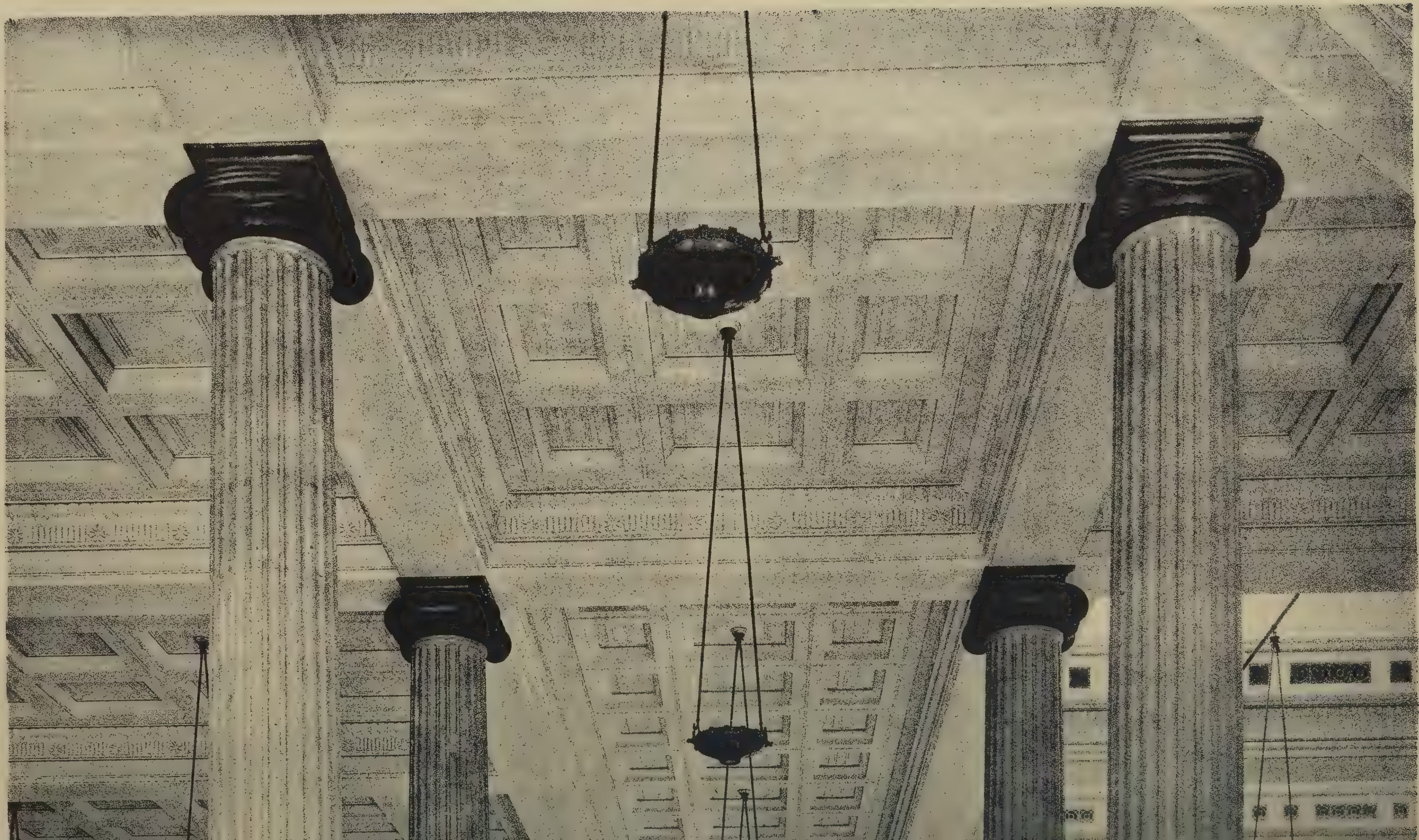

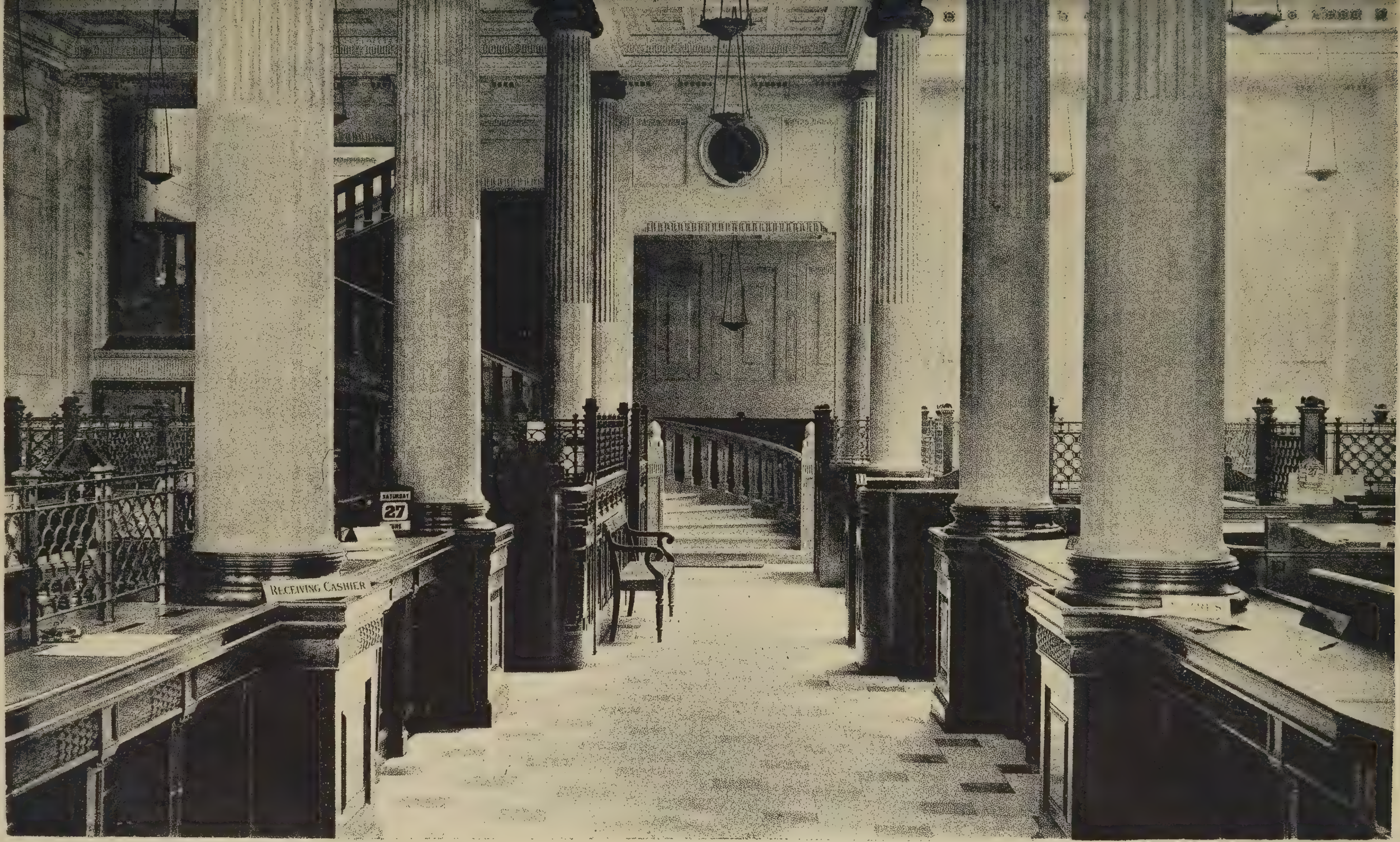

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They are, in a word, more keen to find out and adopt good new ideas, for the solid sensible reason it is to their all-round advantage to do so. And if you find on one side a young man imbued with this spirit in his business, and on the other one who does his work more as drudgery with an eye to leaving it behind at the first moment—which is likely to gain the business, other things being equal? Excessive railway and canal charges may have been in our island largely responsible for decline in some trades, but there have been causes of deeper significance. Have the sons and successors of the founders of many of our industries generally been actuated by the genius, pluck and untiring energy of their fathers? The inducement was not there for the same old strenuous life.

### British Conservatism.

We are a very conservative people. A great statesman lately referred to our pedantry and self-conceit of former years with regard to foreign politics. The same faults have been with us in some branches of business. The Prince of Wales, a great thinker, gave his advice to the nation to "wake up" out of this position. We are doing this, and we have made an excellent start towards "speeding up" by owning to ourselves that it is really possible we can be beaten.

There are many events of the past few years that have borne upon us relentlessly that we have not been doing our best, that we have not acted up to our capacity, that we have been too self-satisfied. I need not refer to them in detail, but we know them. Some have come upon us from South Africa with the sharp sudden pain of a blow to our self-conceit; some have hit our self-complacency nearer home. Nothing less would seem to have had real power to move us. We *are* waking up. If we of the building community will but carry forward this resuscitating process and "speed-up" our work, we shall be acting wisely. We have everything in our favour if we will but overcome our old self-satisfied conservatism of thoughts and methods. The English quiet self-respecting determination, coupled with keenness for quicker work and better organization, is all we need. It is not entirely the highest speed that is wanted, but the old good workmanship, better speed and progress, well-organized methods.

### American Competition.

I was recently asking an Englishman who had lived twelve years in Melbourne his opinion of American competition there. He illustrated his answer by saying if one heard of a good prospecting locality, and went to see it, one would be sure to find either a Scotchman or an Englishman there already pegging out claims; but if one went into an ironmonger's store probably half the goods would be American, the remaining portion being English of the same pattern exactly as ten years ago, strong and durable as ever, whilst the American productions of the same class, not as strong and durable as the English make, but improved in style and pattern two or three times in the period. This illustration very clearly explains our respective positions.

I am spending some of your time upon this portion of the subject, for it forms a large part of the principle from which everything springs. We are becoming more alive to the necessity of quickening-up our methods.

### An Illustration of what Americans Do.

Allow me to take an instance from some other trade than the building trade—from the boot and shoe trade. It illustrates the principle alluded to. Some years ago this trade was greatly assailed by American manufacturers. They had with skill and ingenuity brought labour-saving machinery to great perfection, and had carefully considered the needs of the trade and the requirements of the people, their customers. They invaded this country without let or hindrance, causing much trouble to our workpeople in that industry. But our shoe manufacturers are dropping their comparatively conservative ways and adopting the latest machinery, and are, as they should, recovering their position. If they formerly had had the incentive to be improving their methods the American trade would not have come here at all. Now they have to fight it, which they are doing, and are winning. It will be the same probably in every other industry that has been attacked, if we will only in earnestness and reality rise to the occasion. From what has fallen within my experience, I have not the slightest pessimism about our trade, our businesses, if we are only true to ourselves and our capabilities. The words "English manufacture" are a hall-mark the world over for excellence and finish. I have seen in the shops of America such words as "All the goods in this establishment guaranteed of English manufacture," which is another side of the shield to that usually presented to our view.

### Building at High Speed.

There is not the remotest claim that American buildings are better built than ours. Work rushed by flares and at night, for instance, cannot be as good as that accomplished by daylight. I am a believer also in the sober section of our working men and women, whose skill has no equal, and I very much doubt if in times of stress and difficulty their quiet determined courage has any equal, either.

In some sections of industrial activity it will be very difficult to regain our former position, and it will only be accomplished by long patient study and application. But it is not only this in many cases. I am thinking at the moment of the chemical industries. The German manufacturers are said to have succeeded in obtaining a wider grasp of this business than would have been possible if we had had the inclination and the foresight to have provided thorough training easily within reach. But our Patent laws are answerable for a great deal of it. Every other nation but ours makes it conditional to work or license a patent if granted in their territory, but we allow a patent to be taken here without this. Although aniline dyes, for instance, were first made in England, the effect is that Germans patent their improved chemical methods in both countries, working them in their own country and stopping anybody doing so here. Surely such a law should be altered if we complain about bad trade. We are deliberately helping the foreigner in many cases against ourselves. There are scores of inventions made by Englishmen thus patented and credited to other peoples by the action of these Patent laws, and among them many connected with the building trade. This is my excuse for naming them. Even the most fiscally-upsetting Conservative or the most commercially-reposeful Radical could not object to freeing us from such prejudices as are contained in our present Patent laws.

### What the Inducements are in America.

There are more drones here than in the American hive. This is not very healthy if we are to retain our position.

One way to effect an improvement is to provide inducements. A young American will work and study in his business because he is assured of remunerative employment at the end of it, and the more he knows and the smarter he is the better he will be paid. That inducement does not hold good here to the same extent. If a man is a labourer he will not be allowed to lay bricks, however clever he may be at it, until he has served many years of apprenticeship. What inducement then has he to learn to lay bricks? Further, are our new magnificent technical schools filled with eager youths striving to extend their knowledge in the particular line of their calling? Many there are who industriously and commendably apply themselves to it, but there is not the eager hearty entering-in of the great mass of the people, because the inducement is not there. Can the desire for knowledge of building construction in the average builder's clerk be compared to his anxiety for a football match?

### The Architect's Position.

The second factor mentioned was the position and work of the architect. The great body of architects are greatly interested in their calling, and are keen in their business application, with great capacity for work. They possess, among other reasons, a strong inducement for the due fulfilment of their duties in the fact of the fascination and joy in the work itself. But we have not, as a body, sufficiently risen to the fact that a month saved in the preparation of drawings and data probably means a month's interest and a month's profit to our clients. We have not also, as a body, sufficiently educated ourselves in modern advance in those forms of construction and the use of materials leading to saving of time, with their attendant advantages. And if we had, probably some county council by-laws would prevent their adoption.

### The Early Supply of Drawings.

It is not fair to a contractor, ready with his plant, his office, his desire to please, to be hampered in his progress by want of drawings, which are his illustrated instructions, his directions. He is a wise architect who will learn that by saving time he is assisting his client and strengthening his own reputation. I am fully aware of the delicate ground I am now crossing. There are many men in my profession as much to the fore in all this as any American, but it is not the average. And in speaking of assisting the speed of execution I am as fully aware as anyone that speed is not everything, that in some cases it is a distinct disadvantage in construction and stability, that there are circumstances in which it would be decidedly detrimental to the structure and averse to the interests of one's clients, and in other cases it would be impossible to build quickly. But as a body we do not furnish the contractor with the drawings as quickly as we should if we are expecting him to exercise all he can in forwarding matters. I once knew an architect who obtained estimates for ten different designs for a dining-room dado before he could make up his mind, and I have no doubt many in this room could give some amusing anecdotes of a similar character.

### Superintendence.

Further, we in England—architects and builders—do not as fully fill the ranks of superintendents of the works as we advantageously might. We can most of us learn something here from the Americans. A clerk of works, capable worthy man though he be, whether formerly a joiner or of any other trade, is generally considered to be performing the whole duty of man by watching material as it arrives, to see if equal to the contract requirements, by keeping data as to weather, number of men employed, &c. This, in any work above a small one, needs augmenting. By all means retain the clerk of works for these necessary duties, adding to them the keeping of progress plans, but in any more important work another and a more highly trained assistant, or half a dozen such, may be added.

It is impossible to carry out a large work with expedition without the aid of plenty of superintendence.

If there is much steel employed, a qualified engineer is needed at the steel works to test the materials and to personally see that the proper rolling is done and that the beams, stanchions and work generally as first needed are being put together well in time for delivery before they are actually needed for placing in position. Capable men are needed on the building itself to supervise sections of the work and personally see that the rate of progress is maintained, that whatever materials are needed in succession are on the spot. There must be a system of organization, and each individual supervisor must know his position in it and undertake that his individual section lacks nothing by want of foresight. These superintendents, under the control of the architect, must look forward in their work and convince themselves all is ordered well ahead and is to be in time. Organization by a capable practical head is needed—and the architect is the man appointed to be that head and director. On my own buildings I have progress plans, with the dates upon which certain parts of the work are expected to be completed, it being the duty of the superintendent of any one part to see that such instructions are carried out. He has a defined work to see to. In a building we have now on hand in the North, covering about 5¼ acres of land, this is done and every part of the work mapped out. It is organization. It saves time and is methodical. It is what an American would do. You probably do it also, but it is not universal. In one building we were doing there was a large amount of timber necessary which we bought in America, and we had an inspector in our own pay at New Orleans to inspect the timber before being put on board, in order to ensure proper material and despatch. An American would act similarly.

(*To be concluded next week.*)

## Keystones.

**The South-Eastern Hospital** is to be reconstructed at a cost of £135,200.

**The Society of Architects** has removed from St. James's Hall, Piccadilly, to Staple Inn Buildings (South), Holborn, W.C.

**A Memorial in St. Giles's Cathedral, Edinburgh,** to the officers and men of the Royal Scots who fell in the South African war was unveiled by Lord Rosebery last Wednesday.

**Architects and Electrical Work.**—The Leeds and Yorkshire Architectural Society held their first Craft Evening of the session last week, when Mr. Edwin C. Wallis, A.I.E.E. (a vice-president of the National Association of Electrical Contractors), read a paper on "Electrical Work as Affecting Architects," in the course of which he said electrical hoists were coming more and more into use, working either with continuous, single-phase or two-phase currents; they were quite manageable, and in some respects were superior to hydraulic hoists; while the cost of working them was less wherever electricity could be obtained at a low figure. Passing on to the question of electric lighting, Mr. Wallis said that twenty years ago there was little of it in Leeds, which began with 500 h.p. and now had 14,000 h.p., with another 4,000 h.p. in view. Speaking of the attitude of architects towards the electrical contractor, he said that architects had found time to make the setting of the light worthy of its surroundings. At a time when the electrician had but one idea, such as used to be termed "a bottle on a string," men of education and taste devoted time and attention to enhancement. Referring incidentally to the electric lighting of the Rylands Library at Manchester and St. Paul's Cathedral, Mr. Wallis mentioned as a contrast the present art gallery and reading-rooms connected with it at Bradford. He said it should not be in the power of any man or any committee to make public rooms hideous.

**A Covered Market in High Street, Putney,** is to be formed by the L.C.C.

**At Alphamstone Church, Essex,** the chancel has been restored by Mr. A. Blomfield Jackson.

**M. Rodin** has been elected president of the International Society of Sculptors, Painters and Gravers, in succession to the late Mr. James McNeill Whistler.

**Miss Ethel Charles, A.R.I.B.A.,** read a paper on "Reflections on Architecture" before the Liverpool Architectural Society on Monday evening last.

**Mr. William Pywell, A.R.I.B.A.,** has been appointed by the Middlesex County Education Committee as architect for the proposed school at Oaklands Road, Hanwell, to accommodate 1,140 scholars.

**The Catholic Church adjoining Prudhoe Hall, Northumberland,** is to be removed and rebuilt at Prudhoe-on-Tyne, under the direction of Mr. Charles Walker, architect, of Newcastle-on-Tyne. The church is of stone throughout.

**The Roof of Toledo Cathedral** is reported to have fallen in, and serious fears are entertained for the safety of the rest of the building. Toledo Cathedral has a total length of 400ft., a width of 195ft. and a height in the nave of 100ft.

**Competition for Infectious Diseases Hospital and Public Library, Fraserburgh.**—The town council will make no change in the conditions. As these are very unsatisfactory—for one thing there is no assessor—it is hoped that architects will not compete.

**The Usher Hall, Edinburgh.**—The Town Council have decided to take no action in respect of the resolution passed by the Edinburgh Citizens' and Ratepayers' Union urging that these plans should be taken out of the city architect's hands and made the subject of an open competition.

**The Trowel** illustrated on p. 255 is silver-gilt, with an enamelled shield of the arms of England set in the centre of the blade; the handle being set with opals and moonstones and terminated in a royal crown enclosing an ivory ball. It was designed and executed by Mr. Benjamin Nelson.

**Modern Architecture.**—At the annual dinner of the Association of Master Plasterers and Painters of Manchester and Salford, held at Manchester last week, Mr. John Cantrill, submitting "The Manchester Society of Architects," asked how it was that our streets were not as delightful as those of Athens, and our cathedrals as impressively beautiful as those of France? In his reply, Mr. J. W. Beaumont, president of the Manchester Society of Architects, tried to answer the question by observing that the present system of competitive contracting was not favourable to the production of the best architectural results.

**New Members of the R.I.B.A.**—The following gentlemen were elected at the last meeting of the Royal Institute of British Architects:—

*Fellows.*

L. Kitchen, Hull
B. T. Kitchin, Architect to the Local Government Board
S. Perks, P.A.S.I., London
B. A. Slade, London
M. S. Ward, London

*Associates.*

E. P. Archer, London
O. Maxwell Ayrton, London
H. A. Battley, London
T. J. Bee, Sidcup
H. T. Bill, Birmingham
H. Black, Cape Town
G. Church, Warlingham
J. D. Clarke, Wimbledon
W. E. Couch, London
P. B. Dannatt, London
H. E. Davey, London
R. R. Gall, Aberdeen
J. Green, Birmingham
T. F. Green, London
E. M. Joseph, London
A. E. Lacey, Ashford
T. E. Richards, S. Wales
T. Simpson, Strawberry Hill
H. B. Smith, Port Elizabeth
G. Walker, Richmond
S. Warwick, London
R. Wylie, Gateshead

*Hon Associates.*

Lord Balcarres
Lord Windsor

*Hon. Corresponding Member.*

C. F. McKim, President of the American Institute of Architects.

## Builders' Notes.

**Mr. G. Maddock,** builder, of Tamerton Folitt, died recently.

**A new Harbour at Weymouth** is to be constructed by the G.W.R. immediately.

**"Marble Arrolithic"** has been selected for the paving of the new operating theatre at Guy's Hospital. It is being laid by Arrolithic Ltd., 18, Berners Street, London, W.

**The Additions to the Wilts County Asylum, Devizes,** have been supplied by Messrs. E. H. Shorland and Brother, of Manchester, with their patent Manchester grates.

**Strand Improvement: Building Conditions.**—The L.C.C. have decided that an arbitration clause shall be introduced in its agreements, the arbitrator to be appointed by the R.I.B.A.: "the desirability of securing a speedy recoupment" makes it wise to do something to induce builders to put in an appearance. Whether the concession now offered will be sufficient for the purpose remains to be seen. At last week's meeting of the Council Mr. Howard Williams said this would be of very little help to builders. He suggested that in order to get this land leased quickly it should be offered for ninety-nine years instead of eighty years. While the land remained unoccupied, as at present, the Council was adding £3,000 a week to the cost of the improvement.

**Condition of the Building Trade.**—Reports from different parts of the country show that the building trade is generally depressed. At St. Helens the master-builders contemplate placing the whole of the bricklayers and joiners on short time. The brick trade at Oldbury, Rowley and surrounding Black Country districts is also said to be very depressed. A rumour has been circulated that several of the large firms were contemplating closing their works for three or four months. At some places the works are not opened until breakfast time, whilst at others the workmen are only employed three or four days per week. By contrast a report from Toronto says there appears to be no cessation in the building trade which Canada has experienced during the past few years. The outlook for 1904 is very bright. The public works projected involve an expenditure of probably more than 125,000,000 dols., and the carrying out of these works will lead to a great demand for all sorts of building material as well as labour. At Glasgow, too, there is a great boom in progress.

**The Amalgamation of Two Well-known London Building Firms**—Messrs. George Trollope & Sons and Messrs. Colls & Sons—is announced. The chief reasons for the amalgamation are the recent deaths of partners and the wish of the survivors to secure the benefit of each other's assistance in the management of the businesses. The business of Messrs. George Trollope & Sons was established in 1778, and the purchase comprises, in addition to the building business, their important branches of decorators and furnishers, but does not include the business of auctioneers and house and estate agents. The business of Messrs. Colls & Sons was established in 1840. It is intended as far as possible to continue the practical management of the businesses on the same lines as hitherto, and to retain the services of the present managers and staff. The purchase price has been fixed at £400,000, of which £93,000 is payable for the goodwill of Messrs. Trollope's business and £70,940 for Mr. Colls's business. The purchase price is payable as to £247,000, which includes the amount of such goodwill, in fully-paid ordinary shares, and as to £153,000 in cash. The businesses will be taken over subject to all existing trade contracts.

## R.I.B.A. NOVEMBER EXAMINATIONS.

### PASS LIST.

THE following is the pass list for the November examinations of the Royal Institute of British Architects :—

### Preliminary Examination.

J. R. Adamson, Glasgow
E. Ainsworth, Blackburn
G. A. S. Atack, Blackburn
R. W. Atkey, Bournemouth
J. A. Baskerville, Manchester
E. E. Beaumont, Sidcup
F. W. Beech, Wolstanton, Stoke-on-Trent
D. Bell Scarborough
C. H. Blacka, Todmorden
O. A. Bloxam, Rugby
A. H. Boss, London
W. Boyes, Pontefract
A. Bracewell, Keighley
R. O. Bridger, London
S. T. Brittain, St. Annes on-Sea
G. D. Burgess, Ealing
A. C Burlingham, Edgbaston, Birmingham
F. W. Burnett, Tondu, Bridgend
K. Cameron, Eccles
D. J. Campkin, Sutton
C F. Cargill, London
H. P. L. Cart, London
J. W. Carter, jun , Rugby
C. D. Carus-Wilson, Rugby
R. W. Cash, Aberdeen
C. Catchpole, Ipswich
H. Cherrington, Tipton
H. Clarke, jun., Chelmsford
H. H. Clarke, Weston-super-Mare
G. B. Clay, London
G. D. Clunies-Ross, London
K. A. Cockrill, Gorleston
P. J. L. Collins, Wembley
J. A. Cook, Cardiff
E. Cooper, London
F. R. Cooper, Kettering
F. J. Daniel London
O. Davies, London
G. L. Day, Taunton
J. J. Dobson, Wingate Station
E. F. Duncanson, Bickley Park
R. B. H. Ebbs, Bromley
L. W. Edmonds, London
R. Evans, London
J. S. Ferrier, Edinburgh
L. J. Finning, Exeter
H. W. Flanagin, London
J. G. Flanigan, Belfast
W. S. Flockhart, London
E. H. Forster, Doncaster
P. Fraser, London
H. French, Hedon, near Hull
L. Furniss, London
F. H. J. Gabbatt, Burton-on-Trent
J. Gillespie, St. Andrews
E. B. Glanfield, Slough
B. M. Goodwin, Croydon
J. W. Green, Pitsmoor, Sheffield
E. Haley, Manchester
H. Hall, Leicester
S. Hall, Withington
W. Harvey, Hastings
T. L. Hastie, Dennistoun, Glasgow
N. Hawkins, St. Leonards
J. W. Hays, Wingate
F. H. Heppel, Worcester
L. J. Hicks, Egham Hill
E. E. Hodder, Thornton Heath
G. Hollins, Newcastle. Staffs
T. G. Jackson, London
H. G. Jefferies, Chelmsford
A. W. Johnson, Sheffield
C. M. Jones, Swindon
S. Kaye, Alnwick
G. G. King, Belfast
R. Knoop, Lancaster
A. N. Knox, Glasgow
M. B. Lawson, London
C. H. Lay, Ipswich
B. Legge, St. Albans
D. C. Leigh, Winsford
J. G. Martin, Oldham
F. C. Mason, Banstead
D. J. Moir, Perth
T. S. Moore, Maryport
H. A. Munnion, London
B. O. Nash, Brighton
H. Niemann-Smith, London
H. Nurse, Wakefield
C. R. Orchard, Exeter
H. W. Parnacott, London
E. Parr, Sunderland
A. J. Perrin, London
T. Pickmere, Liverpool
J. V. R. Porteous, Lytham
L. J. Prestwich, London
J. H. Ravenscroft, Liverpool
W. A. Rigg, Carnforth
C. W. Roescher, Nottingham
P. W. Rollin, London
W. Rose, Bedford
F. Scatchard, Castleford
J. F. Schofield, London
E. A. Scott, London
J. A. Seaton, Lytham
G. B. Selleck, Plymouth
G. P. Smith, Tonbridge
R. I. Smith, Weston-super-Mare
S. P. Smith, Leeds
H. Southon, London
J. W. Stanley, Manchester
W. L. Stephens, Liskeard
E. Stevens, Newcastle-on-Tyne
T. M. Swales, Wigan
W. W. Tasker, North Shields
R. H. Taylor, Perth
T. W. Thompson, Trimdon Colliery, Durham
D. H. Thomson, London
H. Thorne, Barnstaple
S. H. Thorpe, London
H. C. Tomkins, Newport I.W.
A. Travis, Littleborough
L. Velasco, London
A. L. Wade, London
C. P. Walgate. Beverley
J. L. Warry, London
G. Waterhouse, Leytonstone
W. C. Watson, West Hartlepool
S. J. Wearing, Leicester
H. S. Webber, Public Works Department, South Africa
S. J. Webber, Maidenhead
T. G. Welburn, Campbeltown
E. Weston, Blackpool
E. A. Weston, London
A. R. Westworth, London
W. A. Whiddington, London
J. E. Whitehead, jun., Sheffield
T. H. Whittaker, Nottingham
W. S. Willan, Kettering
H. H. S. Willey, Reigate
A. G. Wilson, Tayport
G. C. Wilson, London
C. R. Winter, Hucknall Torkard
N. Worsley, Blackpool
G. H. Yeoman, London
A. M. C. Young, London

### Intermediate Examination.

[Names in Order of Merit.]

L. T. Moore, London
C. Batley, Brentwood
A. H. Lamont, Edinburgh
D. L. Solomon, London
W. Stockdale, North Shields
H. Shackleton, Keighley
H. W. Humphry, Bournemouth
H. H. Golding, Woolwich
O. H. W. Hillerns, Hessle
A. H. Atkinson, London
E. C. M. Willmott, Cardiff
F. Dyer, Manchester
A. C. Goulder, Woodford Green
J. N. Horsfield, jun , Kingston-on-Thames
W. Turpin, Sunderland
T. L. Dale, Marlborough
E. B. Muff. Bexley Heath
P. B. M. Hope, London
F. W. Tempest, Sutton-in-Ashfield
R. A. Thomas, Southsea
H. C. Swindells, Fairfield, near Manchester
C. C. Durston, Weston-super-Mare
D. Bamford, Manchester
W. T. McN. Barrett, Stoke-on Trent
R. J. Buck, Horsham
A Bullock, London
H. Clay, Gainsborough
J. Cocker, Timperley
J. Davidson, Loughton
A. C. M. Edwards, Rickmansworth
D. A. Forster. Chertsey
D. P. Hayworth, London
W. W. Hitchins, Plymouth
A. P. Hohnfeldt, Hull
C. E. Hewitt, Nottingham
T. F. Ingram. Wakefield
S. Jacques, London
R. Johnston, London
A. S. Killby, London
S. H. J. Murch, Loughton
J. Myers, London
L. W. Myers, Cambridge
W. E. Paterson, Cheltenham
G. E. Peto, Bath
A. P. H. Pierce. London
A. H. Robinson, Birmingham
C K. Roe, London
H. F. Tasker, London
A N Tucker, Plymouth
T. W. Watkins, London
A. F. Wickenden, Hull
J. A. Wilson, London
C. W. Wood, London

### Exemptions.

The following Probationers, who have attended the full two years' course in architecture at University College, Liverpool, and have obtained a first-class certificate at the College Final Examination, were, on the recommendation of the Board of Examiners, exempted from sitting for the Intermediate Examination, and have been admitted as Students R.I.B.A., the work done by them during the session having been approved by the Board as testimonies of study :—L. Barmish, Birkdale, Southport ; J. G. C. Birch, Chester ; E. H. Honeyburne, Southport ; J. N. Lewis, Liverpool ; K. Cameron, Eccles.

TROWEL USED BY HIS MAJESTY THE KING WHEN LAYING THE FOUNDATION-STONE OF THE SANATORIUM. (*See* p. 254.)

### Final Examination.

[49 candidates : 22 passed.]

H. W. Asman, Bradford
L. L. Bright, Nottingham
M. N. Castello, London
H. W. Cubitt, London
W. R. Davidge, London
W. J. Delbridge, London
G. Dykes, jun., Glasgow
H. T. Fowler, Barrow-in-Furness
E. G. H. Gunn, London
H. A. Hall, London
W. Hemingway, Bolton
H. W. Hobbiss, London
F. G. Johnson. London
J. S. Lee, London
H. B. Mackenzie, Cardiff
F. W. Newman, London
H. M. Pritchard, Cardiff
T. H. Robinson, London
A. Rollo, London
G. L. Russell, London
H. W. Stone, Taunton
J. J. Wood, Leeds.

The failures were as follows :—(I) Design, 19 ; (II) Mouldings, &c., 26 ; (III) Materials, 9 ; (IV) Sanitation, 13 ; (V) Specifications, 8 ; (VI) Construction—Foundations, walls, &c., 10 ; (VII) Construction — Iron and Steel, &c., 11.

*Ashpitel Prize.* — Mr. F. W. Newman, London.

## Enquiries Answered.

*The services of a large staff of experts are at the disposal of readers who require information on architectural, constructional or legal matters. Questions should in all cases be addressed to the Editor. The querist's name and address must always be given, not necessarily for publication.*

### The Incorporated Church Building Society.

BRENTWOOD. — R. H. B. writes : "What is the address of the Incorporated Church Building Society ?"

7, Dean's Yard, Westminster. The secretary is the Rev. William Bonner Leighton Hopkins, M.A.

### Clocks of the City Churches.

In futher reference to the enquiry on p. 238 of last week's issue, Mr. Mansford writes : "I find the works of overhanging clocks are usually within the tower at about the same (but not necessarily the same) level. A single shaft or rod goes out towards the dials, and a bevelled wheel is used to 'give a lead' in another direction, usually at right angles. Four wheels are usually necessary for each dial that has a pair of hands."

### Hammer-Beam Roof-Truss.

DUBLIN.—J. L. D. writes : "In further reference to the enquiry on p. 217 of your issue for November 18th, is the design for the roof principal strong enough as I drew it, or will it require to have iron tie-bars introduced ?"

The reply given states clearly what is required. The original scantlings would do, but the truss as a whole was not strong enough without some alteration, and required the bolts to be shifted, an iron plate to be added, and either a tie-rod or an extra stage in the buttress would be desirable to make it perfectly safe. HENRY ADAMS.

### Fastening for Manger.

BRENTWOOD.—R. H. B. writes : "Referring to Mr. H. M. Cautley's paper on 'Farm Buildings,' read before the Architectural Association and published in your issue for November 25th, I should like to ask the author whether he would consider my method of fastening cows by the mangers a good one. In my own mind I consider it has many advantages. It is as follows :—On each side of the usual division post, say, of 4in. by 4in. oak, cast-iron sockets are bolted, and stout ash staves of 2in. diameter are passed through the top sockets into the bottom ones, a ring to which the chain is attached being threaded on each stave. The staves are secured in position by a screw through a hole drilled in the top socket. The difficulty often arises of releasing a cow that has become 'cast' or is otherwise unable to move owing to the tether-chain fastening being inaccessible. By my arrangement the stave can easily and quickly be sawn in two, releasing the ring."

Your correspondent's suggestion for using ash staves in iron sockets for fastening up cows to the stall divisions, in place of the usual iron rods, seems to be an admirable one. I should question whether the difficulty would "often" arise of releasing a cow as he suggests, or when the neck fastening could not be got at, but there is no doubt that a saw is a thing much more likely to be found quickly than a spanner, and more handy and expeditious to use in such a case.

H. MUNRO CAUTLEY, A.R.I.B.A.

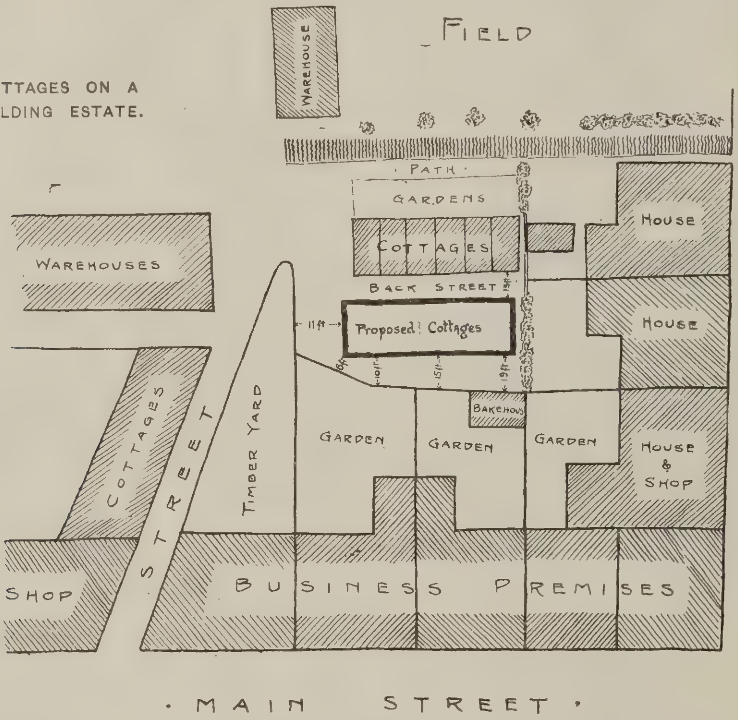
### Building Construction Examination.

SUSSEX.—ENQUIRER writes: “Can one go in for a Science and Art building construction examination (advanced) without attending a Science and Art class; if so, what should be done?”

Apply to the secretary, Science and Art Department, South Kensington, for particulars, an examination application form, and the name of your local centre at which to attend for examination.

### Cottages on a Building Estate.

HALTWHISTLE.—E. H. writes: “The accompanying sketch shows the block plan of a site upon which I contemplate building. I have prepared plans for six cottages, shown by thick lines. The plans were rejected by the council, who demanded that I should make a 36ft. street in front of the cottages. The surveyor to the council also stated that the whole of the 36ft. which was to form a street was to be taken from my site alone. My intentions are merely to make a 13ft. back street as shown, and to lay-out all the land in front of the new cottages for garden purposes, forming a footpath only to the front portions of the cottages. Have the council any power to demand a front street being formed, as it would be absolutely unnecessary in this case? I should like also to draw attention to the fact that the only approach to the proposed cottages is by a street 14ft. or 15ft. wide.”



COTTAGES ON A BUILDING ESTATE.

Yes, the local authority appear to be acting quite within their legal powers in requiring a proper road or front street to be formed. In fact, we consider that the council would not be adequately performing the duties devolving upon them under the Public Health Act if they permitted the erection of the six cottages as proposed. T. E. C.

### Sewers to Cottage Property.

X. Y. Z. writes: “I sent in plans to the rural district council for laying-out fifty building sites, showing the proposed sewers and drains required; the sewer was shown to come to the boundary of my own land, which left about 30yds. between my boundary and the existing sewer in a public street. The plan was referred to the clerk of the council for his opinion as to the duty of the council to put in the sewer over private land to connect my sewer for draining the houses to the existing sewer, and on his advice the plans were approved last April. On July 7th I informed the council that some of my houses were nearing completion, and would be ready for tenants at the August term. I also sent them a reminder on September 7th. The sewer is not yet completed, and they have altered the proposed course, so that it touches my boundary at a different point, and thus part of my sewer will have to be taken up and relaid. (1) At whose cost should this be done? (2) Am I entitled to any compensation for loss of rent during the time my houses have been vacant awaiting the connection of the sewer? The delay has arisen through some misunderstanding or dispute between the rural district council and the parish council, who were ordered to do the work and would not.”

(1) Subject to your being in a position to give satisfactory proof of the facts you mention, I think you are rightly entitled to claim that the rural district council should lay their sewer in accordance with their agreement and the plans which were approved, and upon the faith of the acceptance of which you expended your capital on your own portion of the sewer. I think it would be an act of grace on your part to allow them to alter the position of their own sewer and to relay yours at their own expense. The gist of the whole matter, however, turns upon the documentary evidence, and I can only advise you to submit the case to a solicitor should you find the rural district council unreasonable (2) The answer to the second part of your question is, I fear, in the negative, unless indeed (as is very improbable) you can show that the council gave an undertaking to complete the work by a certain date. F. S. I.

### Discoloured Stonework.

GLASGOW.—SUBSCRIBER writes: “A brick and rough-cast building with white freestone dressings has just been completed. The stone contains iron, and has started to bleed, discolouring both itself and the rough-cast. (1) What can I do, as the stonework will probably turn black? (2) Can the stain on the rough-cast be removed?”

We cannot suggest any method of getting rid of the iron which will not be similarly destructive of the stone or rough-cast itself. The stain is due to particles of iron compounds in the stone oxidizing when exposed to the atmosphere. It might be possible to retard the action by preventing the air having such free access to the surface of the stone, say, by coating several times with a silicating solution, so as to produce a kind of glass-like protective covering, but the interior of the stone will need protecting from the air in the same way. We do not think the stone will turn black, though it may be much discoloured, and we advise you to let it alone for several years until the iron has oxidized and then rub down the face again to bring up clean.

## BUILDING BY-LAWS REFORM ASSOCIATION.

AT a meeting of the Council of the above Association held last week at 45, Parliament Street, Sir William Chance in the chair, the following resolutions were passed unanimously:—

1.—(A) That a By-laws Committee to consider and report on the amendments needed in the existing building by-laws be and is hereby appointed, consisting of the following members:—Mr. W. M. Acworth, Lord Robert Cecil, Mr. A. H. Clough, Mr. A. Graham, Mr. W. Henman, Mr. Mark H. Judge, Mr. E. L. Lutyens, Mr. Arthur Newbold, Dr. G. V. Poore, Mr. H. A. Powell, Mr. Lacy Ridge, Mr. R. W. Schultz, Mr. J. St.-Loe Strachey, Mr. E. D. Till, Mr. Thackeray Turner, Mr. C. Turnor, Mr. H. G. Willink, the Hon. Percy Wyndham, together with the chairman and honorary secretary.

(B) That the report of the special committee appointed on May 14th last, as adopted by the council, be referred to the By-laws Committee with a view to the work being continued on the lines therein laid down, especially as regards the following points:—

(i) For the purpose of securing, with as little delay as may be, some relief from the more oppressive of the by-laws now in force in rural districts, the committee to approach the Local Government Board and endeavour to secure their publishing a new set of Model By-laws for these districts, embodying amendments which the Committee may suggest to the desired end. Further, to urge district councils to amend existing by-laws accordingly.

(ii) Following on the above, to prepare a set of draft building by-laws carrying out the recommendations of the Special Committee that “the by-laws should lay down principles” and that “each by-law should provide that, unless the principle it enunciates is otherwise given effect to, to the satisfaction of the local authority, it shall be considered to be given effect to if the requirements set out in the schedule to the by-law are complied with.”

(iii) As soon as practicable to deal with the by-laws of urban districts in like manner.

2.—That the above resolution be forwarded to the members of the Association in a circular letter requesting them to inform the By-laws Committee of any cases of hardship under existing by-laws, and asking them to make the Association known to their friends, in order that the number of members may be increased as much as possible before the annual meeting in February next.

**A new County Police Court at Grimsby,** in Brighowgate, has been built at a cost of about £9,000, from designs by the county surveyor, Mr. Thropp, assisted by his partner, Mr. Cuthbert Harding, A.R.I.B.A. The builders were Messrs. Hewins & Goodhand.

# Electrical Notes.

### Two-rate Meters.

In last week's notes we referred to the maximum-demand system of payment for electricity, and showed its limitations It is clear that what is wanted is some sort of apparatus that will register the electricity consumed during the hours of maximum load apart from the rest of the day, and so not penalize the consumer for any extra lights he may burn at odd intervals. Such a meter is in existence, but its price has up to the present been somewhat against its universal adoption. This is the Aron Two-rate Meter. It consists of an Aron meter combined with a clock, which can be so set that the high-tariff can be brought into force for any length of time and between any two points of the twenty-four hours. The meter has two trains of wheels with a dial to each; one dial reads the high-tariff units and the other the low-tariff units, and the clock shifts the registering device from one dial to the other according to how it is set. For instance, suppose the high tariff were to be 6d. between 7 and 9 p.m., and the low tariff 3d. during the rest of the twenty-four hours: then at 7 o'clock the high-tariff dial would begin to register, and at 9 o'clock it would automatically stop, and the registering would be transferred to the low-tariff dial. Thus the consumer is able not only to regulate his lights according to what he has to pay, but he can also always see at a glance how much is debited against him.

### The Flat Rate.

This implies that one tariff only is charged; and whilst it is undoubtedly the ideal condition of things, few station engineers have adopted it, for the reasons already stated. In a Utopian supply, where the load would be constant throughout the twenty-four hours (*i.e.*, the load factor 100 per cent.), the flat rate would be the only possible method of charging. Nevertheless it has been adopted in some places, especially where there is a large motor load during the daytime; and it is the universal opinion that all other systems will gradually disappear as electricity becomes more popular.

### Miniature Arc Lamps.

As with the Nernst lamps, so with the present little arc lamps: English manufacturers have been caught napping by the Germans. Whilst the former is closely protected by patents, the latter is nothing more nor less than what it is called, but it gives a pretty effect and burns well. The Nernst lamps have not been so popular as was anticipated, partly no doubt owing to the unpleasant colours, but chiefly because they did not appear to stand the vagaries of so-called constant voltage. It is a pity that more experiments were not made and that the present improved type was not first launched on the market. With the miniature arc lamp, however, the case is different, no doubt because of the fact that anyone could make a small arc lamp if he wished. Therefore the makers perfected the article and then had the first run on the market with a large stock. It is to be hoped that some English manufacturers of arc lamps will be able at least to get some of the profits resulting from the demand for such lamps.

### Transmutation of Radium.

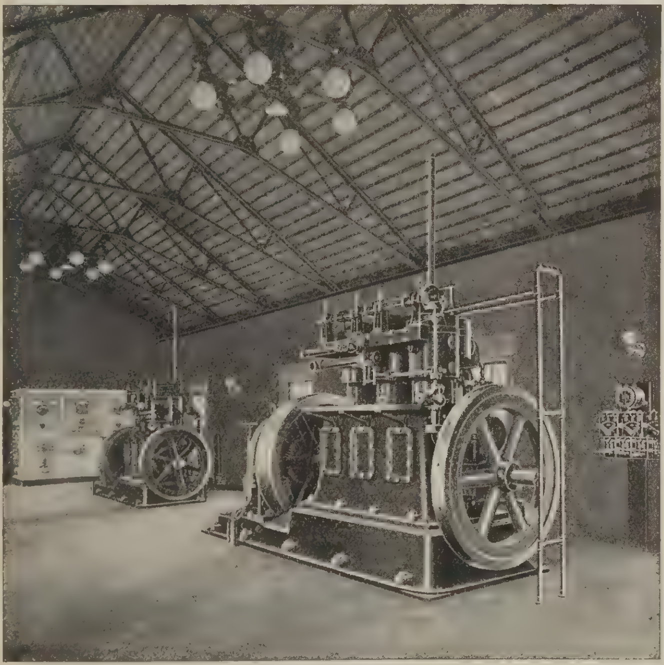
Many who have read of the latest discovery class this subject with abstract physics, and others with chemistry. But it should not be forgotten that much more is involved, namely, the nature of electricity, and, in fact, the solution of the problem of matter. Modern theory holds the two terms to be almost synonymous, and the work which was done by J. J. Thompson, Lodge and others before the discovery of radium all tended to show that the latter merely manifests in an exaggerated degree the eternal working of all matter, and the existence of a primary element or form of energy which accounts for everything else.

### The N.E.M.A and the N.E.C.A.

At last the agreement between these two associations has been signed—the auspicious event having taken place on November 30th. The terms come into force on January 1st next, and in the meantime both parties will have to set their houses in order and prepare for the new state of things. The chief clauses may briefly be stated to be as follows: The manufacturers agree not to give architects or consulting engineers any trade discounts, nor to supply shippers except the goods be delivered f.o.b. They also bind themselves to give members of the N.E.C.A. a preferential discount of 2½ per cent. The Contractors' Association agree to buy only from the members of the N.E.M.A.—unless the customer specifies other makes of goods. These are the broad outlines; it will be interesting to see how the arrangement will work.

A.M.I.E.E.

**Conduit Tramways for North London.**—For the early reconstruction on the conduit system of the first 22½ miles of the London County Council's northern tramways, and for lines in the south, tenders are to be invited for 12,500 tons of rails, conductor tees, fastenings, &c., at an estimated cost of £90,000.



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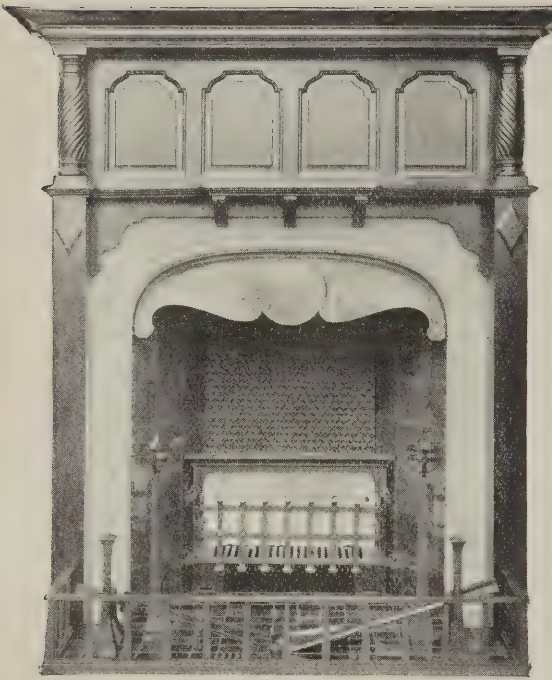
BY SPECIAL APPOINTMENT

# WARING'S

WARING & GILLOW. LD



Chimneypiece in Oak with moulded stone surround. Price on application.

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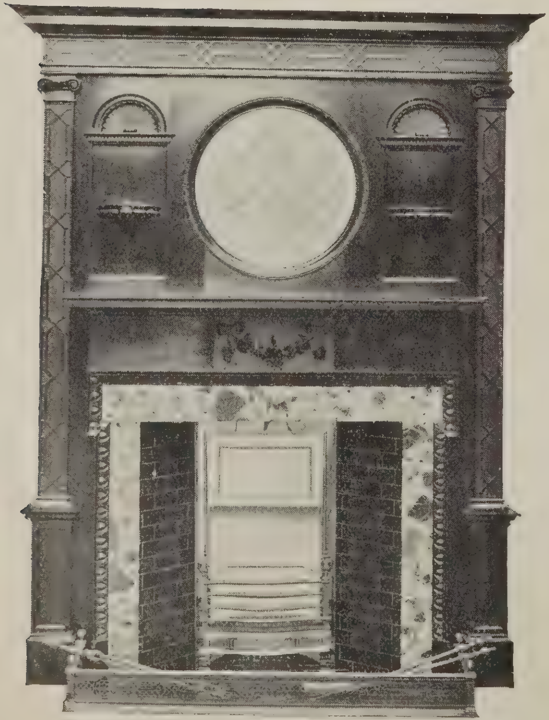

Chippendale Chimneypiece in Mahogany with tiled interior. Price on application.

175–181, OXFORD STREET, W.,
175, 176, SLOANE STREET, S.W.,
RUE GLÜCK, PARIS,
BOLD STREET, LIVERPOOL,
DEANSGATE, MANCHESTER,
AND JOHANNESBURG.

# Trade and Craft.

### Some New Designs for Terra-cotta.

When one recalls some of the atrocious productions which certain terra-cotta manufacturers have been wont to force on the trade for many years past, it is with considerable satisfaction that one regards the series of designs by Mr. M. J. Adams now introduced by Messrs. W. C. Gibson & Co., Ltd., of Scotswood-on-Tyne. These include a design for a fountain for a public park, in buff terra-cotta, very simple and effective; a terra-cotta garden seat, a very pleasing sundial set on a neat base, a terra-cotta vase stand, and several designs for flower-pots. No doubt there are many architects and builders who will be glad to know of these goods, which are finished in the best possible manner. They are all shown in a catalogue which can be obtained on application.

### A Patent Waste Trap.

The disadvantage of an ordinary "S" trap is that it cannot be opened for inspection and cleaning purposes. Messrs. Benham & Sons, Ltd., of 50, 52 and 66, Wigmore Street, London, W., have therefore introduced their patent "Access" waste trap for sinks, lavatory basins, &c., to get rid of this defect. It is made of galvanized cast-iron, the inspection cover being secured by two brass fly-nuts. The inlet and outlet connections are screwed for standard wrought-iron fittings, from 2in. downwards, and may be fitted with brass connections for lead pipes. The cover can be easily removed for cleaning, and replaced, the joint being resealed with any soft material. The trap can be supplied with or without the attachments, for ventilating purposes, as desired. The prices for 2in. pipe are—vertical trap, 8s. 6d.; angle trap, 7s. 9d.; Y-piece, with cleaning plug, 4s. 9d.; T-piece, with cleaning plug, 3s. 9d.

# Coming Events.

### Wednesday, December 9.

NORTHERN ARCHITECTURAL ASSOCIATION.—Mr. G. S. Aitken on "Bothwell Castle," at 7.30 p.m

GLASGOW ARCHITECTURAL ASSOCIATION. — Mr. Theodore Fyfe on "Diggings at Knossos," at 8 p.m.

SOCIETY OF ANTIQUARIES.—Ordinary Meeting at 8.30 p.m.

EDINBURGH ARCHITECTURAL ASSOCIATION (Associates' Section).—Mr J. Stuart Syme on "The Art of Sculpture in Ancient Egypt." at 8 p.m.

ARCHITECTURAL ASSOCIATION (Camera and Cycling Club).—Demonstration by The Lumière N. A. Co., Ltd., on "Colour-Photography," at 7.30 p.m.

INSTITUTION OF CIVIL ENGINEERS.—Students' Visit to the Locomotive Works of the North London Railway, at Bow Road.

SANITARY INSTITUTE.—Mr. Maurice Fitzmaurice, C.M.G., M.I.C.E., and Mr. H. R. Kenwood, M.B., on "The Flooding of Basements in London by Sewage," at 8 p.m.

SOCIETY OF ARTS.—Mr. H. H. Cunnynghame on "Furnaces suitable for Jewellers' Work, Enamelling, Art Casting and other suitable Industries," at 8 p.m.

INSTITUTION OF ELECTRICAL ENGINEERS.—Annual Dinner.

### Thursday, December 10.

INSTITUTION OF ELECTRICAL ENGINEERS.—M. M. E. Hospitalier on "The Slow Registration of Rapid Phenomena by Strobographic Methods: the 'Ondographe' and 'Puissancegraphe' (Wave Recorder and Power Recorder)," at 8 p.m.

MANCHESTER SOCIETY OF ARCHITECTS.—Mr. Ellis Marsland on "The Statutory Registration of Architects," at 6.45 p.m.

### Friday, December 11.

TRAMWAYS AND LIGHT RAILWAYS ASSOCIATION (Society of Arts, John Street, Adelphi). - M. Atherley Jones, K.C., M.P., on "Protection in Special Relation to Tramway and Light Railway Enterprise," at 8 p.m.

BIRMINGHAM ARCHITECTURAL ASSOCIATION.—Mr. Percy Fitzgerald on "Robert Adam (Artist and Architect) and His System of Architecture."

### Saturday, December 12.

BRITISH ASSOCIATION OF WATERWORKS ENGINEERS.—Winter Meeting, Geological Society's Rooms, Burlington House, at 11 a.m. Election of Council and Officers. Prof. Henry Robinson on "The Storage of Flood Water." Mr. Alfred J. Jenkins on "The New Reservoir for the Hoylake and West Kirby Waterworks." Mr. Neil J. Peters on "The Cogan Extensions of the Cardiff Corporation Waterworks."

NORTH OF ENGLAND INSTITUTE OF MINING AND MECHANICAL ENGINEERS.—General Meeting at 2 p.m.

GLASGOW TECHNICAL COLLEGE SCIENTIFIC SOCIETY.—Mr. Arthur A. Wynne, A.M.I.E.E., on "Steam Turbine Machinery," at 7.30 p.m.

### Monday, December 14.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.—Mr. William Henman, F.R.I.B.A., and Henry Lea, C.E., on "The Royal Victoria Hopital, Belfast: Its Inception, Design and Equipment," at 8 p.m.

INCORPORATED CLERKS OF WORKS ASSOCIATION, Carpenters' Hall, London Wall.—Paper by Mr. Arthur T. Bolton, A.R.I.B.A., on "Ingram Houses: Residential Clubs for Young Men," 8.30.

### Tuesday, December 15.

INSTITUTION OF CIVIL ENGINEERS.—Prof. James Campbell Brown, D.Sc., on "Deposits in Pipes and other Channels conveying Portable Water," and Mr. Osbert Chadwick, M.I.C.E., and Mr. Bertram Blount, A.M.I.C.E., on "The Purification of Water highly charged with Vegetable Matter, with special reference to the Effect of Aëration," at 8 p.m.

### Wednesday, December 16.

ARCHITECTURAL ASSOCIATION (Discussion Section).—Mr. A. O. Collard, A.R.I.B.A., on "The Work of 'an Exhibition' Architect," at 7.30 p.m.

EDINBURGH ARCHITECTURAL ASSOCIATION.—Mr. W. E. Snell on "The Objects of the Garden City Association," at 8 p.m.

INSTITUTE OF SANITARY ENGINEERS.—Half-yearly meeting at 4.30 p.m. Annual Dinner at 6.30 p.m.

# Bankruptcies.

[Abbreviations: R.O.—receiving order; P.E.—public examination; C.C.—county court; O.R.—official receiver Adj.—Adjudication.]

DURING THE WEEK ending Dec. 4th twenty-eight failures in the building and timber trades in England and Wales were gazetted.

A. FAIRHEAD, builder, Westcliff-on-Sea Adj. Nov. 27th.

J. A. BUNCE, builder, Newport, I.W. Adj. Nov. 20th.

J. ELLIS, surveyor, Charlton. Adj. Nov. 20th.

W. H. SIMMONS, painter, Birmingham. Adj. Nov. 27th.

J. W. STORR, electrical engineer, Dudley. R.O. Nov. 27th.

C. F. BROWN, painter, Leeds. R.O. Nov. 26th. P.E., Leeds C.C., Dec. 22nd, at 11.

S. GREENHOUGH, painter and decorator, Bradford. R.O. Nov. 23rd. P.E., Bradford C.C., Dec. 9th, at 10.

THOMAS GLOVER, builder and decorator, Eastbourne. Liabilities £3,6 7; assets £1,889.

EADE & Co., timber and builders' supply merchants, Brighton. Adj. Nov. 27th.

H. W. GABBETT-FAIRFAX, civil engineer, Leamington Spa. P.E., Warwick Shirehall, Dec. 11th, at 2.

HOOLEY, TALBOT & Co., electrical engineers and contractors, Rugby. R.O. Nov. 24th.

S. MARRIOTT, builder and contractor, Woodville. R.O. Nov. 27th.

J. C. ELSTOB, joiner and builder, Houghton-le-Spring. R.O. Nov. 26th.

A. MADDALENI, builder and stonemason, Southend. P.E., Bankruptcy Court, London, Jan. 15th, at 22.

T. H. WYMONDE, engineer, London, S.W. Adj. Nov. 26th.

J. WESTBROOK, builder and contractor, Thornton Heath. P.E., Croydon C.C., Dec. 16th, at 11.

R. STEELE, joiner and builder, Harrowgate. R.O. Nov. 21st. P E., York Courts of Justice, Jan. 8th, at 11.

J. THORNTON, joiner and contractor, Rotherham. R.O. Nov. 25th.

J. WILKS, painter and decorator, Leeds. R.O. Nov. 23rd. P.E., Leeds C.C., Dec. 22nd, at 11.

ANGLO-AMERICAN TIMBER YARD, London, N. Adj. Nov. 28th.

L. LUPTON, painter and plumber, Cark-in-Cartmel. First meeting, Temperance Hall, Ulverston, Dec. 11th, at 2.45.

T. MOSLEY, builder, Leicester. R.O. Nov. 25th. First meeting, O.R.'s, Leicester, Dec. 10th, at 11. P.E., The Castle, Leicester, Dec. 18th, at 10.

J. D. CARR, builder, Harrogate. R.O. Nov. 23rd. First meeting, O.R's, York, Dec. 10th, at 12.30. P.E., York Courts of Justice, Jan. 8th, at 11.

J. VINCENT TAAFE & EVENS, timber merchants, Old Broad Street, E.C. R.O. Nov. 26th. First meeting, Bankruptcy Court, Dec. 11th, at 11. P.E., Bankruptcy Court, Jan. 19th, at 11.30.

C. WRAY, mechanical and electrical engineer, Bradford. R.O. Nov. 26th. First meeting, O.R.'s, Bradford, Dec. 10th, at 3. P.E., Bradford C.C., Dec. 23rd, at 10.

W. HOUGHTON, carpenter and builder, Lowestoft. R.O. Nov. 24th. First meeting, O.R's, Norwich, Dec. 12th, at 12. P.E., Great Yarmouth Town Hall, Jan. 5th, at 11.

A. C. GIBB, builder and contractor, London. Liabilities £ 1,603; £2,826 expected to rank; assets £1,427. Debtor says he entered into a contract with the Willesden Urban Council to build an isolation hospital at Neasden, the contract price being £39,472. He was financed by a stockbroker. but after he had done work to the amount of £22,000 the financing came to an end, and he handed the contract over. His difficulties were largely caused by the unreasonable requirements of the officials of the council in respect of material supplied and work done.

The following companies are to be wound up:—

GUIDE BRIDGE BRICK & TILE CO., LTD.

NORTHERN AND EASTERN SUBURBAN INDUSTRIAL DWELLINGS CO., LTD.

NEWRY QUARRIES, LTD. A. Dean, 24, Fenwick Street Liverpool, and another, liquidators.

PATENT CHIMNEY POT CO., LTD.

TOXTETH SAW MILLS CO., LTD.

YORKSHIRE ELECTRIC POWER SYNDICATE, LTD., Leeds. J. W. Close, 7, Greek St., Leeds, liquidator.

# Current Market Prices.

## FORAGE.

| | | £ | s. | d. | £ | s. | d. |
|---|---|---|---|---|---|---|---|
| Beans .. .. .. | per qr. | 1 | 14 | 0 | 2 | 0 | 0 |
| Clover, best .. .. | per load | 4 | 5 | 0 | 4 | 10 | 0 |
| Hay, good .. .. .. | do. | 3 | 12 | 6 | 4 | 0 | 0 |
| Sainfoin mixture .. | do. | 3 | 15 | 0 | 4 | 5 | 0 |
| Straw .. .. .. | do. | 1 | 10 | 0 | 2 | 0 | 0 |

## OILS AND PAINTS.

| | | £ | s. | d. | £ | s. | d. |
|---|---|---|---|---|---|---|---|
| Castor Oil, French .. | per cwt. | 1 | 0 | 5 | | — | |
| Colza Oil, English .. | do. | 1 | 3 | 6 | | — | |
| Copperas .. .. .. | per ton | 2 | 0 | 0 | | — | |
| Lard Oil .. .. .. | per cwt. | 2 | 15 | 0 | 2 | 17 | 0 |
| Lead, white, ground, carbonate .. .. | do. | 1 | 4 | 10 | | — | |
| Do. red .. .. .. | do. | 1 | 0 | $4\frac{1}{2}$ | | | |
| Linseed Oil, barrels .. | do. | 0 | 18 | $1\frac{1}{2}$ | | — | |
| Petroleum, American .. | per gal. | 0 | 0 | $7\frac{3}{8}$ | 0 | 0 | $7\frac{7}{8}$ |
| Do. Russian .. | do. | 0 | 0 | 6 | 0 | 0 | $7\frac{1}{8}$ |
| Pitch .. .. .. | per barrel | 0 | 8 | 0 | | — | |
| Shellac, orange .. .. | per cwt. | 11 | 17 | 6 | | — | |
| Soda, crystals .. .. | per ton | 3 | 2 | 6 | 3 | 5 | 0 |
| Tallow, Town .. .. | per cwt. | 1 | 7 | 6 | | — | |
| Tar, Stockholm .. .. | per barrel | 1 | 1 | 6 | | — | |
| Turpentine .. .. | per cwt. | 1 | 14 | 6 | | — | |

## METALS.

| | | £ | s. | d. | £ | s. | d. |
|---|---|---|---|---|---|---|---|
| Copper, sheet, strong .. | per ton | 71 | 0 | 0 | | — | |
| Iron, Staffs., bar .. .. | do. | 6 | 0 | 0 | 8 | 10 | 0 |
| Do. Galvanised Corrugated sheet .. | do. | 10 | 15 | 0 | 10 | 17 | 6 |
| Lead, pig, Soft Foreign .. | do. | 11 | 1 | 3 | 11 | 2 | 6 |
| Do. do. English common brands . .. | do. | 11 | 10 | 0 | | — | |
| Do. sheet English 3lb. per sq. ft and upwards .. | do. | 14 | 0 | 0 | | — | |
| Do. pipe .. .. .. | do. | 15 | 0 | 0 | | — | |
| Nails, cut clasp, 3in. to 6in. | do. | 9 | 5 | 0 | | — | |
| Do. floor brads .. | do. | 9 | 0 | 0 | | — | |
| Steel, Staffs., Girders and Angles .. .. | do. | 5 | 10 | 0 | 6 | 5 | 0 |
| Do. do. Mild bars .. | do. | 6 | 0 | 0 | 6 | 5 | 0 |
| Tin, Foreign .. .. | do. | 118 | 15 | 0 | 119 | 5 | 0 |
| Do. English ingots .. | do. | 122 | 10 | 0 | 124 | 0 | 0 |
| Zinc, sheets, Silesian .. | do. | 23 | 2 | 6 | | — | |
| Do. do. Vielle Montaigne | do. | 23 | 10 | 0 | | — | |
| Do. Spelter .. .. | do. | 20 | 10 | 0 | 20 | 17 | 6 |

## TIMBER.

### SOFT WOODS.

| | | £ | s. | d. | £ | s. | d. |
|---|---|---|---|---|---|---|---|
| Fir, Dantzic and Memel | per load | 1 | 13 | 0 | 3 | 0 | 0 |
| Pine, Quebec, Yellow .. | do. | 5 | 5 | 0 | 6 | 5 | 0 |
| Do. Pitch .. .. | do. | 2 | 11 | 0 | 2 | 16 | 0 |
| Laths, log, Dantzic .. | per fath. | 4 | 10 | 0 | 5 | 10 | 0 |
| Do. Norrkoping .. | per bundle | 0 | 0 | $7\frac{3}{4}$ | | — | |
| Deals, St. Petersburg, Yellow, 1st, 3×7 | per stand. | 12 | 0 | 0 | | — | |
| Do. do. do. 3rd, 3×9 | do. | 8 | 10 | 0 | | — | |
| Do. do. do. do. 2½×9 to 3×11 | do. | 8 | 10 | 0 | | — | |
| Do. do. White, 3rd, 3×7 | do. | 7 | 15 | 0 | | — | |
| Do. do. do. Unsorted, 3×7 | do. | 9 | 5 | 0 | | — | |
| Do. Norrkoping, Yellow Unsorted, 3×12 | do. | 8 | 5 | 0 | | — | |
| Do. Sund, Yellow, 3rd, 4×9 | do. | 15 | 15 | 0 | | — | |
| Do. Mesane, Yellow, 3rd, 3×9 | do. | 13 | 5 | 0 | | — | |
| Do. Soroka, Yellow, 2nd, 3×9 | do. | 16 | 0 | 0 | | — | |
| Do. do. do. 3rd. do. | do. | 12 | 5 | 0 | | — | |
| Do. Petschora, Yellow, 1st, 3×9 | do. | 18 | 5 | 0 | | — | |
| Do. do. do. 2nd, 3×11 to 3×12 | do. | 17 | 0 | 0 | | — | |
| Do. do. do. do. 3×9 | do. | 14 | 5 | 0 | | — | |
| Do. do. do. Unsorted, 3×8 | do. | 7 | 5 | 0 | | — | |
| Do. do. do. do. 3×7 | do. | 10 | 5 | 0 | | — | |
| Do. do. White, 3rd, 3×9 | do. | 8 | 5 | 0 | | — | |
| Do. Oserko, Yellow, 5th, 3×9 | do. | 9 | 0 | 0 | | — | |
| Do. Nederkalix, Yellow, 1st & 2nd, 3×7 | do. | 8 | 15 | 0 | | — | |
| Do. do. do. 2nd, 4×8 | do. | 10 | 10 | 0 | | — | |
| Do. Riga, White, 4×11 | do. | 8 | 10 | 0 | | — | |
| Do. Bosnian, White, 1st & 2nd, 3×9 | do. | 8 | 5 | 0 | | — | |
| Do. Iggesund, Yellow, 5th, 3×9 | do. | 9 | 0 | 0 | | — | |
| Do. Kemi, Yellow, 1st & 2nd, 4×9 | do. | 10 | 15 | 0 | | — | |
| Do. Bathurst, Spruce, 1st, 2nd & 3rd, Unsorted, 3×11 .. .. .. | do. | 8 | 5 | 0 | | — | |
| Do. Montreal, Yell. Pine, 1st, 3×11 to 18 | do. | 17 | 10 | 0 | | — | |
| Do. Quebec Spruce, 2nd, 3×9 | do. | 9 | 5 | 0 | | — | |
| Do. do. Yellow, Pine, 3rd, 3×11 | do. | 12 | 15 | 0 | | — | |
| Battens, all kinds .. | do. | 6 | 10 | 0 | 21 | 15 | 0 |
| Flooring Boards 1in. prepared, 1st .. .. | per square | 0 | 11 | 9 | 0 | 12 | 3 |
| Do. 2nd .. .. | do. | 0 | 9 | 6 | | | |
| Do. 3rd, &c. .. .. | do. | 0 | 6 | 9 | 0 | 8 | 0 |

### HARD WOODS.

| | | £ | s. | d. | £ | s. | d. |
|---|---|---|---|---|---|---|---|
| Ash, Quebec .. .. | per load | 3 | 12 | 6 | | — | |
| Birch, St. John, 3½×8 to 15 | do. | 8 | 0 | 0 | | — | |
| Box, Turkey .. .. | per ton | 15 | 0 | 0 | 20 | 0 | 0 |
| Cedar, Cuba .. .. | per ft. sup. | 0 | 0 | $5\frac{1}{4}$ | | — | |
| Do. Honduras .. | do. | 0 | 0 | $4\frac{15}{16}$ | | — | |
| Do. Tobasco .. .. | do. | 0 | 0 | 3 | | — | |
| Elm, Quebec .. .. | per load | 4 | 2 | 6 | | — | |
| Mahogany, Average Price for Cargo, Honduras .. | per ft. sup. | 0 | 0 | $6\frac{19}{32}$ | | — | |
| Do. African .. | do. | 0 | 0 | $3\frac{15}{16}$ | | — | |
| Do. St. Domingo | do. | 0 | 0 | $3\frac{29}{32}$ | | — | |
| Do. Cuba .. | do. | 0 | 0 | $4\frac{11}{32}$ | 0 | 0 | $4\frac{11}{32}$ |
| Do. Lagos .. | do. | 0 | 0 | $3\frac{21}{32}$ | 0 | 0 | $4\frac{19}{32}$ |

# Complete List of Contracts Open.

| DATE OF DELIVERY. | WORK TO BE EXECUTED. | FOR WHOM. | FROM WHOM FORMS OF TENDERS MAY BE OBTAINED |
|---|---|---|---|
| | **BUILDING:** | | |
| Dec. 10 | Stockton—School | — | J Tweedy, Clerk, School Board Offices, Stockton on-Tees. |
| ,, 10 | Belton, Doncaster—House, &c. | G. A. Maw | H. Kelsey, Architect, Queen Street, Epworth. |
| ,, 10 | Bingley, Yorks—Villa | W. R. Dawson | W. R. Nunns, Architect, Market Street, Bingley. |
| ,, 10 | Nottingham—Cement and Bricks | Works & Ways Committee | A. Brown, City Engineer, Nottingham. |
| ,, 10 | Leicester—Bricks &c. | Corporation | E. G. Mawbey, Borough Engineer, Town Hall, Manchester. |
| ,, 11 | Manchester—Abattoirs | Markets Committee | City Architect, Town Hall, Manchester. |
| ,, 11 | Merthyr, Wales—Rebuilding Premises | — | C. M. Davies, 112 High Street, Merthyr, Wales. |
| ,, 11 | Wortley, Leeds—School | — | C. F. Wilkinson, 35 Park Square, Leeds. |
| ,, 11 | Hull—Cement and Lime | Corporation | A. E. White, City Engineer, Town Hall, Hull. |
| ,, 11 | Gallows Plain, near Hertford—Alterations, &c., to Hospital | Joint Hospital Board | G. H. Gisby, Clerk, Ware, Herts. |
| ,, 11 | Peterborough—Extension of Post Office | Commissioners of H.M.Works,&c | Secretary, H.M. Offices of Works. Storey's Gate, London S.W. |
| ,, 11 | Queenborough, Kent—Coastguard Station | — | Director of Works Dept., Admiralty, 21 Northumberland Av., W.C. |
| ,, 11 | London, S.E.—Nine Shops | — | A. L. Guy, 4 Verulam Buildings, Grays's Inn, W.C. |
| ,, 11 | Littlehampton, Sussex—Coastguard Station | — | Superintendent, Engineer. H.M. Dockyard, Portsmouth. |
| ,, 11 | Newton St. Cyres—Farm Buildings | — | Ellis, Son & Bowden, Surveyors, Bedford Chambers. Exeter. |
| ,, 11 | Lurgan, co. Armagh—Post Office | Board of Public Works | W. H. Stephens & Son, 13 Donegall Square North, Belfast. |
| ,, 12 | Manchester—Exhauster-House, &c. | Gas Committee | C. Nickson, Superintendent Gas Dept., Town Hall, Manchester. |
| ,, 12 | Aberystwyth—Arcade and Concert Hall | D. Phillips | J. A. Jones, 7 Queen's Terrace, Aberystwyth. |
| ,, 12 | Wigan—Swimming Baths | Corporation | J. B. & W. Thornley, Architects, Library Street, Wigan. |
| ,, 12 | Murroe, Limerick—Church | Very Rev. J. J. Duan | J. O'Malley, Architect, Glenworth Street, Limerick. |
| ,, 14 | Birmingham—Superstructure, Internal Finishings, &c., of University Buildings. | — | A. Webb & E. J. Bell, 19 Queen Anne's Gate, London, S.W. |
| ,, 14 | Canterbury—Renovation of Guildhall, &c. | Corporation | A. C. Tuxley, City Surveyor, Guildhall, Canterbury. |
| ,, 14 | Belfast—Cement | City & District Water Comsnrs. | R. Hamilton, Secretary, Waterworks Office, Belfast. |
| ,, 14 | Manchester—Fireclay Goods | Gas Committee | C. Nickson, Superintendent, Gas Offices, Town Hall, Manchester |
| ,, 14 | Birmingham—Alterations, &c., to Workhouse Infirmary | Guardians | W. H. Ward, Architect, Paradise Street, Birmingham. |
| ,, 15 | Kendal—Oak Dado | Corporation | Borough Engineer, Town Hall, Kendal. |
| ,, 15 | London, S.E.—River Wall, &c. | Commissioners of H.M.Works &c. | J. Wager, H.M. Office of Works, &c., Storey's Gate, S.W. |
| ,, 15 | Shipley, Yorks—Gasworks Extension | Urban District Council | T. Newbigging & Son, 5 Norfolk Street, Manchester. |
| ,, 15 | Llansaintffraid Minister's House, Schoolroom, &c. | Calvinistic Methodist Connexion | Shayler & Ridge, Bank Chambers, Oswestry. |
| ,, 16 | Clutton, near Bristol—Alterations, &c., to Workhouse | Guardians | W. F. Bird, Architect, Midsomer Norton. |
| ,, 16 | Halifax—Villas, &c. | — | W. C. Williams, 29 Southgate, Halifax. |
| ,, 16 | Portsmouth—Wall | Corporation | Borough Engineer, Town Hall, Portsmouth. |
| ,, 17 | Redruth—Business Premises | W. Snell | S. Hill, Architect, Green Lane, Redruth. |
| ,, 18 | London, S.E.—Bricks, Lime and Cement | Guy's Hospital Governors | Superintendent, Guy's Hospital, London, S.E. |
| ,, 18 | Lancaster—Dining-Room, &c. | — | Clerk of Works, County Lunatic Asylum, Lancaster. |
| ,, 18 | Lancaster—Asylum Buildings | Visiting Committee | Clerk of Works, County Lunatic Asylum, Lancaster. |
| ,, 18 | London, S.E.—Post Office Superstructure | Commissioners of H.M.Works, &c | J. Wager, H.M. Office of Works &c., Storey's Gate, London, S.W. |
| ,, 18 | Portsmouth—Galleries at School | Education Committee | A. H. Bone, Surveyor, Cambridge Junction, Portsmouth. |
| ,, 18 | Pontypridd—Alterations, &c., to County Court | Commissioners of H.M.Works,&c | Secretary, H.M. Office of Works, Storey's Gate, London, S.W. |
| ,, 18 | Brandon Quay, co. Kerry—Coastguard Station | Board of Public Works | H. Williams, Secretary, Office of Public Works, Dublin. |
| ,, 19 | Kingston-upon-Thames—Museum and Art Gallery | Corporation | A. Cox, 4 Adam Street, Adelphi, W C. |
| ,, 21 | Roseyards, co. Antrim Ireland—Church | Presbyterian Church Committee | S. J. M'Fadden, Architect, Queen Street, Coleraine. |
| ,, 21 | Tylorstown—Sixty-four Houses | Duke of York Building Club | D. C. Evans, Secretary, Duke of York Hotel, Tylorstown. |
| ,, 21 | Mallow—Sixteen Artizans' Dwellings | Urban District Council | B. E. F. Sheehy, 57 George Street, Limerick. |
| ,, 22 | Bury, Lancs—Hospital | Guardians | A Hopkinson, 15 Agur Street, Bury |
| ,, 22 | Gillingham, Kent—School | Education Committee | E. T. Atchison, 8 Waterloo Road, New Brompton, Gillingham. |
| ,, 23 | Kendal—Mission Hall | — | J. F. Curwen, 26 Highgate, Kendal |
| ,, 28 | Bradwell-on-Sea—Six Workmen's Cottages | Maldon Rural District Council | H. G. Keywood, 6 Market Hill, Maldon, Essex. |
| | **ENGINEERING:** | | |
| Dec. 10 | Kings' Norton, Birmingham—Electric Cable | Urban District Council | C. H. Gadsby, 20 Victoria Street, Westminster, S.W. |
| ,, 11 | Doncaster—Waterworks | Rural District Council | J. H. Taylor, Engineer, Manor House, Barnsley. |
| ,, 12 | Preston—Switchboard | Corporation | W. H. Tittensor, 25 Burrow Road, Preston. |
| ,, 14 | Belfast—Bridge | Improvement Committee | City Surveyor, Town Hall, Belfast. |
| ,, 14 | Raunds, Northants—Sinking Well | Urban District Council | T. Yorke, Engineer, Raunds. |
| ,, 14 | West Ham—Electric Wiring, &c. | Education Committee | W. Jacques, 2 Fen Court, Fenchurch Street, E.C. |
| ,, 14 | London, N.E.—Boilers, &c. | Bethnal Green Union | G. H. Hughes, 97 Queen Victoria Street, London, E.C. |
| ,, 14 | Madrid—Port Works | — | Commercial Intelligence Branch, Board of Trade, 50 Parliament Street, S.W. |
| ,, 14 | Maldon Essex—Waterworks | Rural District Council | H. G. Keywood, Water Engineer, Maldon, Essex. |
| ,, 15 | New York, U.S.A.—Tunnels | Pennsylvania, New Jersey & New York Railway Co. | Chief Engineer, 20 West Thirty-fourth Street, New York City, New York State, U.S.A. |
| ,, 15 | New York, U.S.A.—Tunnels under North River | Pennsylvania, New York & Long Island Railway Co. | Chief Engineer. 20 West Thirty-fourth Street, New York City, New York State, U.S.A. |
| ,, 15 | Inverary, Scotland—Pier Repairs | Town Council | R. S. Corrigall, Town Clerk, Inverary, Scotland. |
| ,, 15 | Strabane, Ireland—Gasworks | Urban District Council | C. Hunt, 15 Victoria Street, Westminster, S.W. |
| ,, 15 | New York, U.S.A.—Tunnels to Long Island | Pennsylvania, New York & Long Island Railway Co. | Chief Engineer, 20 West Thirty-fourth Street, New York City, New York State, U.S.A. |
| ,, 15 | Los Andes, Chili—Railway | — | Commercial Intelligence Branch, Board of Trade, 50 Parliament Street, S.W. |
| ,, 18 | Welton, Lincs—Waterworks | Rural District Council | Elliott & Brown, Engineers, Burton Buildings, Parliament Street, Nottingham. |
| ,, 21 | Swansea—Heating Apparatus | Urban District School Board | G. E. T. Lawrence, 22 Buckingham St., Adelphi, London, W.C. |
| ,, 23 | Belgium—Railway Line | Société Nationale des Chemins de Fer Vicinaux. | M. de Masy, Rue Miles No. 17 Antwerp. |
| ,, 23 | Portugal—Bridge over River | Administration of State Railways | Secretariat, Administration of State Railways, Ministry of Public Works, Lisbon. |
| ,, 26 | Plasencia, Spain—Electrict Lighting of Town | — | Secretariat of the Municipality, Plasencia, Spain. |
| ,, 30 | Sydney, New South Wales—Telegraph, Telephone & Electric Light Material, &c. | General Post Office | General Post Offices, Sydney, Melbourne, Brisbane, Adelaide Hobart and Perth. |
| ,, 30 | Shrewsbury and Birkenhead—Bridges | London & North-Western and Great Western Joint Railways. | Joint Engineer, Woodside Station, Birkenhead. |
| ,, 31 | Rotherham—Bacteriological Filters | Sewerage Works Committee | R. E. W. Berrington, Engineer, Bank Buildings, Wolverhampton. |
| 1904. | | | |
| Jan. 19 | Rotherhithe and Radcliff—Footway Tunnel | London County Council | Engineer's Department, County Hall, Spring Gardens, S.W. |
| ,, 19 | Greenwich—Pumps | London County Council | County Hall, Spring Gardens, S.W. |
| ,, 19 | London—Tunnel | London County Council | Engineer's Department, County Hall, Spring Gardens, S.W. |
| Feb. 1 | Cairo—Three Road Bridges over Nile | Ministry of Public Works | Commercial Intelligence Branch, Board of Trade, 50 Parliament Street, S.W. |
| Mar. 17 | Christchurch, New Zealand—Electrical Tramways | — | Agent-General for New Zealand, Victoria Street, London. |
| | **FURNITURE:** | | |
| Dec. 17 | Northampton—Furniture for Hospital | General Hospital Committee | C. S. Risbee, Secretary, General Hospital, Northampton. |
| | **IRON AND STEEL:** | | |
| Dec. 10 | Norway—Copper Plates and Brass Pipes | — | Marineus Intendant, Horten, Norway. |
| ,, 10 | Aberaman, Aberdare—Stores | Powell Duffryn Steam Coal Co. | Stores Manager. Aberaman Offices, near Aberdare. |
| ,, 10 | Nottingham—Stores | Works and Ways Committee | A. Brown, City Engineer, Guildhall, Nottingham. |
| ,, 10 | Leicester—Stores | Corporation | E. G. Mawbey, Borough Engineer, Town Hall, Leicester. |
| ,, 10 | Odense, Denmark—Rails, &c. | Odense Norre Broby-Faaborg Railway. | Herr Kier, Manager of Railway, Odense. |
| ,, 11 | | | |
| ,, 11 | Manchester—Cast-iron Plates | Electricity Committee | T. E. Hughes, Secretary, Electricity Dept., Town Hall, Manchester. |
| ,, 12 | Hull—Iron and Steel, &c. | Corporation | A. E. White, City Engineer, Town Hall, Hull. |
| 14 | Middlesbrough—Stores | TeesConservancyCommissioners | J. H. Amos, Secretary, Board Room, Middlesbrough. |
| ,, 14 | London, N.—Lamps Columns | Hornsey Borough Council | E. J. Lovegrove, Borough Engineer, Municipal Offices, Highgate, N. |
| | Belfast—Stores | Water Commissioners | R. Hamilton, Secretary, Waterworks Office, Belfast. |
| ,, 14 | Edinburgh—Rails | Gas Commissioners | W. R. Herring, Chief Engineer, New Street Works, Edinburgh. |
| ,, 15 | London, S.W.—Tramway Rails | London County Council | Engineer's Department, County Hall, Spring Gardens, S.W. |
| ,, 15 | London, S.W.—Slot Rails, &c. | London County Council | Engineer's Department, County Hall, Spring Gardens. S.W. |
| ,, 15 | London, N.—Iron Fencing | Tottenham U.D.C. | W. H. Prescott, Coombes Croft House, 712 High Road, Tottenham. |
| ,, 15 | London, E.C.—Railway Stores | South Indian Railway Co., Ltd. | Sir G. B. Bruce, 3 Victoria Street, Westminster. |
| ,, 17 | Kendal—Pipes | Corporation | R. H Clucus. Borough Engineer, Kendal. |
| ,, 19 | Bradford—Stores | Corporation | Tramway Offices, 5 Foster Square, Bradford. |

# Complete List of Contracts Open —*continued.*

| DATE OF DELIVERY. | WORK TO BE EXECUTED. | FOR WHOM. | FROM WHOM FORMS OF TENDERS MAY BE OBTAINED. |
|---|---|---|---|
| | **PAINTING AND PLUMBING:** | | |
| Dec. 10 | Sheffield—Plumbing and Glazing | Education Committee | J. F. Moss, Secretary, Education Committee, Leopold St., Sheffield. |
| " 10 | Leicester Oils, Paints and Varnish | Corporation | E. G. Mawbey Borough Engineer, Town Hall, Leicester. |
| " 10 | Nottingham—Plumbing, &c. | Works and Ways Committee | A. Brown, City Engineer, Guildhall, Nottingham. |
| " 11 | Hull—Paints, Oils and Brushes | Corporation | A. E. White, City Engineer, Town Hall, Hull. |
| " 11 | London, S.W.—Cleaning and Painting | Metropolitan Asylums Board | T. D. Mann, Clerk, Board's Offices, Embankment, E.C. |
| " 11 | Canterbury—Painting, &c , at Asylum | ——— | W. J. Jennings, 4 St. Margaret's Street, Canterbury. |
| " 12 | Middlesbrough—Oils and Paints | TeesConservancyCommissioners | J. H. Amos, Secretary, Boardroom, Middlesbrough. |
| " 14 | Lewisham, S.E.—Painting, &c., at the Workhouse | Guardians | H. C. Mott, Union Offices, 286 High Street, Lewisham, S.E. |
| " 14 | Belfast—Paints, Oils, &c. | City and District Water Commissioners. | R. Hamilton, Secretary, Waterworks Office, Belfast. |
| " 15 | London, E.C.—Oils and Colours | South Indian Railway Co. | Sir G. B. Bruce, 3 Victoria Street, Westminster. |
| " 18 | London, S.E.—Painters' Materials, Lead and Glass | Guy's Hospital Governors | Superintendent, Guy's Hospital, London, S.E. |
| | **ROADS AND CARTAGE:** | | |
| Dec. 10 | Leicester—Materials | Corporation | E. G. Mawbey, Borough Surveyor, Town Hall, Leicester. |
| " 10 | Nottingham—Granite Setts, Kerb, &c. | Works and Ways Committee | A. Brown, City Engineer, Guildhall, Nottingham. |
| " 11 | Hull—Scavenging, Watering, Cartage | Corporation | A. E. White, City Engineer, Town Hall, Hull. |
| " 14 | London, N.—Making-up Streets | Edmonton U.D.C. | G. E. Eachus, Town Hall, Lower Edmonton. |
| " 14 | Belfast—Carting | City and District Water Commissioners. | R. Hamilton, Secretary, Waterworks Office, Belfast. |
| " 15 | Hertford—Paving | Corporation | Borough Surveyor, Hertford. |
| " 15 | London, N.—Making-up Roads | Tottenham U.D.C. | W. H. Prescott, Coombes Croft House, 712 High Road, Tottenham. |
| " 15 | Brentford—Making up Road | Urban District Council | N. Parr, Surveyor, Clifden House, Boston Road, Brentford. |
| " 16 | Strood, near Rochester—Roadway | Rural District Council | J. E. Povey, Clerk, Workhouse, Strood. |
| " 16 | Levenshulme, Lancs—Private Street Works | Urban District Council | J. Jepson, Surveyor, Guardian Chambers, Tiviot Dale, Stockport. |
| " 17 | Croydon—Street Works | Rural District Council | E. J. Gowan, Clerk, Town Hall, Croydon. |
| " 18 | London, S.E.—Sand, Ballast and Rubbish Cartage | Guy's Hospital Governors | Superintendent, Guy's Hospital London, S.E. |
| " 19 | Bradford—Poplar Wood Blocks | Corporation | Tramway Offices, 5 Foster Square, Bradford. |
| " 21 | Chelmsford—Granite | Guardians | W. W. Duffield, 96 High Street, Chelmsford. |
| 1904.<br>Jan. 19 | Rotherhithe and Radcliffe—Carriageway | London County Council | Engineer's Department, County Hall, Spring Gardens, S.W. |
| | **SANITARY:** | | |
| Dec. 10 | North Shields—Sewer, &c. | Tynemouth R.D.C. | A. S. Dinning, 21 Ellison Place, Newcastle-on-Tyne. |
| " 10 | Nottingham—Pipes, &c. | Works and Ways Committee | A. Brown, City Engineer, Guildhall, Nottingham. |
| " 11 | Newton, Scotland—Sewers, &c. | District Committee | W. L. Douglass, District Surveyor, District Offices, Hamilton. |
| " 11 | Hull—Salt-Glazed Pipes, &c. | Corporation | A. E. White, City Engineer, Town Hall, Hull. |
| " 15 | Waddesdon, near Aylesbury—Sewerage and Sewage Works | Rural District Council | G. Luckett, 2 Church Street, Aylesbury. |
| " 16 | Wick, Scotland—Sewerage Works | Town Council | J. Fraser, Engineer, Town Hall, Wick. |
| " 19 | Harrogate—Drainage Works | Corporation | E. W. Dixon, 5 Prospect Crescent, Harrogate. |
| 1904.<br>Jan. 4 | Coalville, Leics—Sewers, &c. | Urban District Council | J. B. Everard, 6 Millston Lane, Leicester. |
| | **TIMBER:** | | |
| Dec. 10 | Aberaman, Aberdare—Timber | Powell Duffryn Steam Coal Co., Ltd. | Stores Manager, Aberaman Offices, near Aberdare. |
| " 10 | Leicester—Timber | Corporation | E. G. Mawbey, Borough Engineer, Town Hall, Leicester. |
| " 10 | Nottingham—Timber | Works and Ways Committee | A. Brown, City Engineer, Guildhall, Nottingham. |
| " 12 | Middlesbrough—Timber | Tees Conservancy Commrs. | J. H. Amos, Secretary, Board Room, Middlesbrough. |
| " 14 | Belfast—Timber | City and District Water Commissioners. | R. Hamilton, Secretary, Waterworks Office, Belfast. |
| 1904.<br>Jan. 15 | Cape Town—Timber | Government Rly. Department | Railway Stores, Cape Town. |
| Dec. 1 | Natal—Sleepers | Government of Natal | Agent-General for Natal, Natal Government Agency, 26 Victoria Street, Westminster. |

# List of Competitions Open.

| DATE OF DELIVERY. | DESIGNS REQUIRED. | AMOUNT OF PREMIUM. | DEPOSIT REQUIRED FOR CONDITIONS, &C. | BY WHOM ADVERTISED. |
|---|---|---|---|---|
| Dec. 10 | Clare, Suffolk—Water Supply Scheme Advice | —— | —— | J. Bigmore, Clerk, R D.C., 24 Queen Street, Haverhill, Suffolk. |
| " 16 | Lambeth, S.E.—Public Library | —— | —— | H. J. Smith, Clerk, Town Hall, Kennington Green, S.E. |
| 1904<br>Jan. 15 | Windsor—Police and Fire Brigade Stations | £26 5s. | £1. | E. A. Stickland, Borough Surveyor, Town Council Offices, Windsor. |
| Jan. 20 | Wakefield—Public Library | —— | —— | C. J. Hudson, Town Clerk, Town Hall, Wakefield. |
| Feb. 1 | Erdington—New Council House & Free Library | £50, £30, £20. | £1 1s. | H. H. Humphries, District Engineer, Public Hall, Erdington, Birmingham. |
| " 1 | Sevenoaks—Public Library | —— | —— | H. J. Thompson, Clerk, Council Offices, Argyle Road, Sevenoaks. |
| Mar. 31 | Vienna—Machinery to Lift Boats on Canal | 100,000, 75,000 & 50,000 kronen. | —— | Austro-Hungarian Consulate-General, 22 Laurence Pountney Lane, E.C. |
| No date | Torquay—Public Library | £52 10s., £31 10s. | —— | F. S. Hex, Town Clerk, Town Hall, Torquay. |

# Tenders.

*Information from accredited sources should be sent to "The Editor" at latest by noon on Monday if intended for publication in the following Wednesday's issue. Results of Tenders cannot be accepted unless they contain the name of the Architect or Surveyor for the work.*

*Addressed postcards on which lists of tenders may be stated will be sent post free on application to the Manager,* BUILDERS' JOURNAL, 6, *Great New Street, Fetter Lane, E.C.*

**Bristol.**—For the erection of warehouses, &c., in Albert Road, St. Phillips, for Messrs. C. Vaughan & Sons. Mr. John A. Wright, architect. Quantities by Mr. W. A. Barratt, Bristol:—

| | |
|---|---|
| T. Broad | £2,376 |
| Eastabrook | 2,368 |
| A. E. Longden | 2,300 |
| J. Perkins & Sons | 2,295 |
| A. J. Beaven | 2,150 |
| R. Wilkins | 2,064 |
| Walkerdine | 1,895 |
| W. J. Bennett | 1,770 |

* Accepted. [All of Bristol.]

**Blundellsands (Liverpool).**—For sewerage works, Blundellsands, for the trustees of the late Nicholas Blundell. Messrs. Mellard, Reade & Son, C.E., engineers, 2, South John Street, Liverpool. Quantities by engineers:—

| | | | |
|---|---|---|---|
| Keating & Son | £2,880 | 11 | 1 |
| P. Balmer | 2,360 | 0 | 0 |
| Marr & Son | 2,350 | 0 | 0 |
| Executors of the late W. F. Chadwick | 2,107 | 3 | 6 |

**Frimley.**—For the construction of gin. sewers, manholes, ventilators, &c., in Chobham Road, for the Frimley U.D.C. Mr. F. C. Uren, engineer, High Street, Camberley:—

| | | | |
|---|---|---|---|
| C. Mott & Co., Staines | £3,176 | 19 | 9 |
| Free & Sons, Maidenhead | 2,500 | 0 | 0 |
| A. C. Soane, Streatham | 2,384 | 0 | 0 |
| W. Norris, Farnham | 2,317 | 5 | 6 |
| J. Coker, Rochester | 2,295 | 0 | 0 |
| Streeter & Todhunter, Godalming | 2,283 | 15 | 9 |
| T. Turner, Blackwater | 2,073 | 17 | 3 |
| F. R. Roberts, Hornchurch | 1,969 | 18 | 6 |
| J. Jackson, Forest Gate | 1,960 | 4 | 0 |
| Cunningham, Fleet | 1,880 | 0 | 0 |
| H. Prescott, Manchester | 1,841 | 11 | 0 |
| Osenton, Tilehurst | 1,817 | 0 | 0 |
| Craig & Son, Camberley | 1,611 | 3 | 0 |
| H. Porter, Clapham Square | 1,586 | 0 | 0 |
| Wheeler,* Southwark | 1,540 | 0 | 0 |
| Swaker, Hounslow | 1,435 | 19 | 0 |
| Ragstone Co., Folkestone | 830 | 19 | 0 |

* Accepted.

**London.**—For erecting three brick structures for temporary school accommodation in the first instance, Torridon Road, Catford, for the London School Board. Mr. T. J. Bailey, architect:—

| | |
|---|---|
| J. Smith & Sons, Ltd. | £4,758 |
| Thomas & Edge | 4,310 |
| T. D. Leng | 4,197 |
| J. & C. Bowyer | 4,052 |
| E. P. Bulled & Co. | 4,047 |
| F. & H. F. Higgs | 3,946 |
| W. Downs* | 3,787 |

* Recommended for acceptance.

**London, E.**—For superstructure of new police court and station at Shoreditch. Mr. J. Dixon Butler, architect, New Scotland Yard, surveyor to the Metropolitan Police. Quantities by Messrs. Thurgood, Son & Chidgey, Charing Cross Chambers, Duke Street, Adelphi —

| | |
|---|---|
| Greenwood, Ltd. | £40 435 |
| Lascelles & Co. | 39,447 |
| Clarke & Bracey | 39,241 |
| H. T. Williams | 39,175 |
| Lathey Brothers | 39,032 |
| Killby & Gayford | 38,986 |
| Mowlem & Co., Ltd. | 38,983 |
| Lawrance & Sons | 38,278 |
| Holliday & Greenwood | 38,247 |
| Holloway Brothers | 38,220 |
| H. Lovatt | 38,200 |
| F. G. Minter | 37,970 |
| F. & H. F. Higgs | 37,840 |
| Grover & Sons | 37,832 |
| Ashby & Horner | 37,095 |
| Leslie & Co. | 35,635 |

**Portsmouth.** — For erection of a new school in Reginald Road, Eastney, for Education Committee. Mr. G. E. Smith, architect, 145, Victoria Road, N., Southsea:—

| | |
|---|---|
| Armitage & Hodgson | £27,434 |
| Rowland Brothers | 25,846 |
| M. Coltherup | 25,550 |
| W. Evans | 25,450 |
| G. J. Davis | 24,523 |
| J. Harding | 24,475 |
| Clark & Sons | 24,462 |
| F. Corke | 24,360 |
| J. Crockerell | 24,123 |
| Perkins & Durrant,* Clive Road, Fratton | 23,983 |

* Accepted.

(*Continued on p.* xx.)

**Advertising Notes.**

*Play your hand if its a good one—don't worry about what the other fellow holds!*

*The other fellow will get quite as much attention as is good for your health, without calling attention to his goods by running them down.*

*People are apt to think you are not squealing purely out of anxiety for them.*

## Appointments Wanted.

*The charge for Advertisements under this heading is 1s. 6d. per insertion not exceeding four lines, and 6d. per line afterward, prepaid. Three insertions may be had for the price of two. Advertisements must reach the Office not later than 5 o'clock on Monday.*

ADVERTISER (33), a competent Surveyor and Draughtsman, with wide experience of construction and materials, offers his services temporarily for nominal salary in return for practise and expert instruction in quantity work. — Write "Practise," BUILDERS' JOURNAL Office, 6, Great New Street, Fetter Lane, E C.

ADVERTISER: 45, F.R.I.B.A., late Executive Engineer, Public Works. Home and Colonial experience. Accept nominal salary to resume home work.—A., 21, Nemoure Road, Acton.

AN ARCHITECT has TIME to ASSIST others with Working Drawings, Details, and Perspectives at own office. Special terms for Competitions. Good general experience—Apply, H. L. FEDDEN, 11, Hart Street, Bloomsbury.

AN ARCHITECT is willing to assist others with designing working drawings from rough sketches, details, furniture delapidations, and superintending works, &c., at own office.—FRANK CATLING, 3, Featherstone Buildings, Holborn, W.C.

ARCHITECT'S ASSISTANT, six years' experience, requires engagement. Contract drawings, details, &c. Surveying, assistance with quantities. Box 2635, BUILDERS' JOURNAL Office, 6, Great New St., Fetter Lane, E.C.

ARCHITECT'S ASSISTANT desires engagement, London district preferred; 5½ years' experience. Contract Drawings, Details, Specifications, knowledge of Quantities, Surveying and Levelling. Good references.—Box 2690, BUILDERS' JOURNAL Office, 6, Great New Street, Fetter Lane, E.C.

ARCHITECT'S ASSISTANT desires situation as IMPROVER in good Office; Country or Town; Home Counties preferred. Neat and careful draughtsman. Good references.—J. D., Cade House, West Malling, Kent.

ARCHITECT'S ASSISTANT (22½) desires engagement. Good draughtsman, well up in working drawings and details, and measuring up. Moderate salary.—Box 2645, BUILDERS' JOURNAL Office, 6, Great New Street, Fetter Lane, E.C.

ARCHITECT'S ASSISTANT (24) desires further experience in good office. London preferred. Accurate, varied experience, details, specifications, perspectives, knowledge of quantities, supply any references required.—Box 2652, BUILDERS' JOURNAL Office, 6, Great New Street, Fetter Lane, E.C.

ARCHITECT'S ASSISTANT (29) desires ENGAGEMENT; 10 years' experience; good draughtsman and colourist; well up in working drawings, details, surveying: good references; moderate salary.—A. RANDALL, Hazelmere, Rusham Road, Egham.

ARCHITECT'S ASSISTANT desires APPOINTMENT in London office; 5 years' varied experience (2½ years Technical School—practical work—and 2½ years articles); good draughtsman; knowledge of surveying; salary a secondary consideration; highest credentials, and undeniable references; life abstainer.—Box 2655, BUILDERS' JOURNAL Office, 6, Great New Street, Fetter Lane, E.C.

ARCHITECT'S and SURVEYOR'S ASSISTANT desires ENGAGEMENT; Midlands preferred; general experience (gentleman); moderate salary.—Apply Box 2643, BUILDERS' JOURNAL Office, 6, Great New Street, Fetter Lane, E.C.

ARCHITECT'S and SURVEYOR'S ASSISTANT desires Re-engagement; six years' London and country practical experience; designs, working drawings, specifications, &c., and surveying; excellent testimonials.—C. D., 30, Beaumont Street, W.

ARCHITECT'S & SURVEYOR'S JUNIOR ASSISTANT desires Engagement (22½), 5½ years' experience. Working drawings, details and levelling. Salary moderate.—Box 2674, BUILDERS' JOURNAL Office, 6, Great New Street, Fetter Lane, E.C.

ARCHITECT'S JUNIOR ASSISTANT desires situation in a Birmingham office; 5½ years' good experience in well-known office. Contract, Plans, Specifications, Details, &c., good draughtsman.—Box 2668, BUILDERS' JOURNAL Office, 6, Great New Street, Fetter Lane, E.C.

ARCHITECT'S SENIOR ASSISTANT, with first-class experience, desires RE-ENGAGEMENT. Good draughtsman and colourist. Well up in design and details.—C. M. C., 31, Acton Lane, Harlesden, N.W.

A. R.I.B.A. with spare time desires to assist in the preparation of Architectural Drawings and Perspectives.—Apply Box 2630, BUILDERS' JOURNAL Office, 6, Great New Street, Fetter Lane, E.C.

BRICKWORK and POINTING WANTED by practical man. Rod or job. Good references. Distance no object.—Address, X. Y. Z., 133, Derby Road, Ilford, Essex.

BRICKWORK AND POINTING, &c., wanted; Scaffolding and Materials if wanted; good refs.—H. F. MEADER, 39, Albert Road, Peckham, S.E.

BRICKWORK or POINTING WANTED by competent man. Any quantity, at most reasonable prices.—Apply W. S., Burlington Place, Woodford Wells, Essex.

BRICKWORK and POINTING WANTED, labour only, by practical experienced man, just finishing large job in East End.—E. M., 41, Sewardstone Road, Victoria Park.

CLERK OF WORKS seeks RE-ENGAGEMENT. Thoroughly practical in all trades. Experience in hospital and public building construction. First-class references and testimonials.—D., 9, Homefield Road, Chiswick.

CLERK OF WORKS, shortly disengaged. Finishing seaside hotel. Practical, reliable, conversant. Details, measurements. References.—P., 29, Smith Terrace, Chelsea, S.W.

CLERK OF WORKS, finishing up at a large West End Club, desires another Appointment. References and testimonials.—Address, EXPERIENCE, c/o Mr. Croll, 39, New Park Road, Brixton Hill, S.W.

CONTRACTOR'S ASSISTANT with Architectural training desires engagement, or as Clerk of Works. Working drawings, details, quantities. Practical management of large contracts; 11 years' experience.—Box 2631, BUILDERS' JOURNAL Office, 6, Great New Street, Fetter Lane, E.C.

DRAUGHTSMAN (23) desires Engagement. First-class certificate (advanced) for Building Construction; also knowledge of Sanitary Engineering, quantities and detail drawings. Six years with leading Ventilating Engineers.—Address, F. W. B., 11, Whitbread Road, Brockley, London, S.E.

DRAUGHTSMAN. 6 years' experience. Desires evening work. Perspectives, inking-in Architect's drawings, and tracings.—P. R. WALKER, 71, Aytoun Road, Brixton, S.W.

EMPLOYERS wanting LABOURERS, Mechanics, Handy Men, &c.—Kindly communicate with the Manager, CHURCH ARMY LABOUR BUREAU, 130, Edgware Road, W. Telephone 1,056, Paddington. No fees.

EVENING WORK desired by neat draughtsman in assisting Architects at office or at home. Terms by arrangement.—Apply W. C. A., 12, Clonmell Road, Fulham, S.W.

EVENING WORK required by a neat Draughtsman in assisting Architects, Surveyors, or Builders in preparing working drawings, details, tracings, specifications, or quantities.—HENRY PHILLIPS, Cottingham, Hull.

FOREMAN of Smiths, Fitters, Erectors, &c., DISENGAGED. Experienced in builder's general ironwork and steel structure. Fair draughtsman. Can estimate, and qualified to manage dept. Excellent testimonials.—G. H., 71, Ockenden Road, London, N.

GENERAL FOREMAN Disengaged wants job. Carpenter. Aged 46. Good references. Town or country. — H. W., 57, Chiswick Road, Lower Edmonton, N.

GENERAL FOREMAN, practical, working, seeks job with Builder. Steady and reliable; competent to carry out all classes of work. Trade, carpenter and joiner.—H. HEMS, 7, Park Grove, Bromley, Kent.

MACHINIST, FOREMAN, seeks ENGAGEMENT (38). Used all kinds joiner's machinery, management of men, and works, set out from plans and rods. Take entire charge. Three and a half years' reference present employers; life experience.—J. S., 57, Sancroft Street, Kennington, S.E.

MACHINIST, JOINER, to take charge, or work spindle and tenoning. 22 years' experience. Country not objected to. Good refs.—H. K., 34, Cumberland Road, Walthamstow.

MACHINIST, young, wants job. Spindle, any planing machines and saw bench. Make cutters and sharp saws. Town or country.—MACHINIST, 18, Lausanne Road, Peckham, S.E.

MACHINIST (27) steady, wants JOB; over and under, thicknesser, rise and fall, bench, improver on four-cutter; Piano or Builder's Mill; 8½. Or could take Builder's Yard Foreman's Job. Good knowledge of materials.—MACHINIST, 28, Blackhorse Road, Walthamstow.

PAPERHANGER (Practical), day or piece work, fill up time painting. Town or Country.—W. PETERS, 477, Woolwich Road, Charlton, S.E.

PLASTERER wants PIECEWORK. Labour only. Town or country. Good references. —T. S., 92, Seaford Road, Tottenham.

PLUMBER (Improver) wants Job, town or country; moderate wages for constant job. Good references.—L. COE, 4, Lamont Road, Chelsea, S.W.

PLUMBER, GAS, and HOT-WATER FITTER wants Job; new work or jobbing; age 24. Distance no object.—J. C., 89, Roman Road, Barnsbury, N

PLUMBERS' Work, Sanitary, Leadwork, Gas and Hot-water Fitting wanted by practical Plumber. Distance no object; references supplied.—JEFFERSON, 13, Warrender Road, Islington, N.

QUANTITY SURVEYOR wishes to arrange with Architects and Builders for preparation of Quantities, Estimates and Accounts, punctuality, accuracy and despatch guaranteed.—Address, Box 2667, BUILDERS' JOURNAL Office, 6, Great New Street, Fetter Lane, E.C.

QUANTITY SURVEYOR'S JUNIOR ASSISTANT, disengaged, desires permanent or temporary appointment; used to routine, industrious, punctual, andr eliable; abstract, bill, tracing, &c.; good references; moderate remuneration required.—Box 2686, BUILDERS' JOURNAL Office, 6, Great New Street, Fetter Lane, E.C.

SHOP FOREMAN of JOINERS seeks RE-ENGAGEMENT. Large experience in all kinds of joinery, good manager of men and machinery. Good references.—Address H. J. BRANSON, c/o Mr. G. Hack, 30, Shaftesbury Road, Watford.

SHOP or GENERAL FOREMAN seeks RE-ENGAGEMENT. Just completed several large shops in West End. Thoroughly practical, energetic, and reliable in all best class work. First-class refs. from best London firms.—G. WALKER, No. 10, Sunnyside Road, Ealing.

TO BUILDERS and SPECULATORS, Wanted Joinery, Carcassing, Stairs (piecework), in large or small quantities. Lowest prices; any distance.—REID, 91, Mill Hill Road, Acton.

WALKING or WORKING FOREMAN of PAINTERS seeks RE-ENGAGEMENT. Experienced manager. Accustomed to full control. Practical in artistic decorations. Good artist. Present situation 4 years.—State wages, "FOREMAN," 59a, Marlboro' Road, Bowes Park, N.

YOUNG MAN seeks Sit. as Foreman for Builder and Contractor. Experience of all trades in building; good refs. from Architects.—Apply Box 2681, BUILDERS' JOURNAL Office, 6, Great New Street, Fetter Lane, E.C.

## Appointments Vacant.

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LONDON REPRESENTATIVE, accustomed to call upon architects and well acquainted with the stone trade, WANTED by the Bath Stone Firms, Ltd.—Apply, stating age, qualifications, experience, and salary required, to GENERAL MANAGER, Bath Stone Office, Bath.

WANTED. A Gentleman in London requires some lessons during the evening at his own residence, in taking off quantities and estimating, by an experienced estimating clerk.—Apply by letter W. W. c/o Mr. Hall, 57, Denmark Hill, S.E.

**5 O'CLOCK P.M. MONDAY IS THE LATEST TIME FOR RECEIVING "WANT" ADVERTISEMENTS.**
**OFFICE: 6, GREAT NEW STREET, FETTER LANE, E.C.**

# BUILDERS' JOURNAL EMPLOYMENT REGISTER.

## FOR 3/- WE WILL ADVERTISE YOU FOR SIX WEEKS.

This register is compiled to bring together Employer and Employed, to their mutual advantage, thus supplying a long recognised need.

In the building trades when a rush of work comes an employer suddenly finds himself in urgent need of employees. Our scheme is designed to assist him in this respect. Employees cannot afford to regularly advertise. After the week in which the advertisement appears it is lost. By our scheme we sustain these advertisements for six weeks. For 3/- we give three insertions (four lines) in our "Appointments Wanted" column (*see* page xvi), and also six insertions in the "Employment Register."

**Instructions.**—Advertisers must furnish their names and full addresses, which will not be published; and a number is assigned to each for identification. All communications will be treated in the strictest confidence. Abbreviations employed:—s., salary required; ex, experience; refs., references; yrs., years.

### ARCHITECTS' ASSISTANTS.

70.—Architect's & Surveyor's Assistant. Age 22. 6 yrs. ex. in all branches. Mod. s. London preferred.

72.—Architect's Assistant. 6 yrs. ex. Details, contract drawings, surveying, and quantities.

73.—Architect's Assistant, with own office, can assist others in working drawings, details, and perspectives.

76.—Architect's Assistant, can assist in preparation of drawings&perspectives.

78.—Architect's Assistant. Good refs., desires situation as improver; neat draughtsman.

81.—Architect's Assistant desires engagement in Midlands. Mod. s. Good genl. experience.

83.—Architect's Assistant, age 22½, mod. s., good draughtsman, general ex.

87.—Architect's Assistant (24), varied ex. and good general knowledge. London preferred.

88.—Architect's Assistant. 5 yrs. varied ex., draughtsman, knowledge of surveying, exceptional refs., mod. s., abstainer.

89.—Architect's Assistant (29), ten yrs. good general ex., draughtsman and colourist, good refs., mod. s.

90.—Architect's Junior Assistant. 5 yrs. ex., good refs, mod. s.

97.—Architect's Junior Assistant. 5½ yrs. good general ex., good draughtsman. Birmingham situation wtd.

4.—Architect's Assistant (22½). 5½ yrs. ex. Mod. s.

9.—Architect's Senior Assistant, first class ex., good draughtsman and colourist. Design, and details.

### BRICKLAYERS.

66.—Bricklayer. Brickwork or pointing wanted by experienced man.

95.—Brickwork & Pointing wtd. by practical man good refs., distance no object.

96.—Brickwork & Pointing wtd., good refs. Scaffolding & materials if reqd.

3.—Brickwork & Pointing wanted by experienced man.

### CARPENTERS & JOINERS.

48.—Carpenter and Joiner's Improver. Age 21. Ex. 5½ years. Good refs.

67.—Carpenter. Piecework. Woodwork, joinery, &c., wanted.

### CLERK.

86.—Builder's Clerk. Shorthand, tracing, office routine, mod. s.

### CONTRACTOR'S ASSISTANT.

74.—Contractor's Assistant. 11 yrs. ex. and architectural training. Working drawings, details, quantities. Situation as clerk of wks. wtd.

### DESIGNERS, TRACINGS, &c.

79.—Architectural Draughtsman. Age 22. 4 yrs. ex. Improver desires engagement.

84.—Architectural Draughtsman, 6 yrs. ex., desires evening work.

99.—Architectural Draughtsman, neat, reqrs. eveng. wrk. at office or at home.

1.—Draughtsman (23). 1st class qualifications in all branches. 6 yrs. ex.

(*Continued on next page.*)

**Interesting to every Builder.**
POLING BOARDS, selected lengths and thicknesses (best quality and full measure).
Also Scaffold Boards, Putlogs, Scantlings, Deals, Battens, and Boards. Lowest wharf prices.
O. H. GLOVER & Co., Ltd., Importers, Hatcham Saw Mills, Old Kent Road, S.E.

**BLUE and**
**FERRO-GALLIC PRINTS**
White line on blue ground, and dark line on white ground.
W. F. STANLEY & Co., Limited,
13, Railway Approach, London Bridge, S.E.
NEW REVISED PRICE LIST POST FREE.
All Prints by Electric Light, no extra charge.
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Ten per cent. of the Premiums returned every six years in cases where no claim has arisen.
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Local Authorities and Contractors.
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Cases in Courts of Interest to Public Officials and Members.
The Official's Corner (Personal and other Notes).
Forthcoming Works. Loans Wanted, &c.
A List of Situations Vacant.
A List of Tenders Required by Public Bodies.
EVERY SATURDAY, PRICE 2d.
27a, FARRINGDON STREET, E.C.

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**MOTTLED GREEN STONE,**
*For Mullions, Sills, Heads, Quoins, Jambs, Fenders, &c.*
Buttermere Green Slate and Stone Works,
KESWICK.

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"BOOKKEEPING FOR BUILDERS."
Showing Clearly How to Keep all the Account Books Used in the Office of a Builder and Contractor. Post free 1s. 2d.
CORSE, BEDFORD ROW STATIONERY WAREHOUSE, THEOBALD'S ROAD, LONDON.
All Books described are kept in stock.
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**LOUGHBOROUGH.**
Manufacturers of
Best Red Pressed and Sand Stock Facing Bricks, &c., also of
Mountsorrel Concrete Paving Flags, Window Heads, Cills, &c.
SLATE MERCHANTS.
Stocks of VELINHELI and BANGOR on hand.

**Pilkington's Tiles**
WORKS:
Clifton Junction, near Manchester.
Manufacturers of
TILES, FAIENCE & MOSAIC
London Show Rooms:
37 & 38, Shoe Lane, E.C
Manchester Show Rooms:
37, Cross Street
Glasgow Show Rooms:
96, Renfield Street

**YORKSHIRE STONE.**
Any kind supplied in the rough, sawn, or dressed ready for fixing.
WM. KNOWLES, Cullingworth, nr. BRADFORD.

ESTABLISHED 1851,
**BIRKBECK BANK,**
Southampton Buildings, Chancery Lane, London.
2½ % DEPOSIT ACCOUNTS repayable on demand. 2½ %
The BIRKBECK ALMANACK, with full particulars, post free.
C. A. RAVENSCROFT, *Managing Director.*

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From Midland and North Country Quarries, write
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Quarry Owners and Stone Merchants,
NOTTINGHAM.

Established 40 Years.
CONTRACTOR TO HIS MAJESTY'S GOVERNMENT, &c.
Telegrams: "SANDBAGS, LONDON." Telephone: 334, KING'S CROSS.
**JOSEPH ARNOLD,** Silver & Building Sand Pits Owner & Contractor,
32, ST. PAUL'S RD., CAMDEN TOWN, LONDON, N.W.
(*Where all communications must be sent.*)
SAND PITS, Grovebury, Shenley Hill and Heath, Nearly 200 Acres, and at Flitwick.
Peat and Loam Grounds, Stock Grove, Heath and Reach Leighton Buzzard, 1,800 Acres extent.
Special Sands for all Trades. Builders' Merchants and Trade Supplied Direct by Boat or Rail. Lowest Rates to all parts. Prices on application as above.
Special Sand for Water and Sewage Filtration and Cement Work, as supplied to the London and Provincial Water Companies, Corporations, District Councils, &c.

**BRICKS. RED BRICK.**
A large Stock of best Red Facings, Light, Medium, and Dark. Red Sand Faced. Also Stock of 100 Patterns Moulded Goods of all descriptions, including CHIMNEY POTS, RIDGE TILES, FLOOR TILES. Architects' own Designs to Order on shortest notice.
*The South Lincolnshire Brick and Tile Co., Ltd., Bourne, Lincs.*

TENDERS—*cont. from* p. xv.

**Swindon.**—For sewering, levelling, paving, metalling, flagging, channelling, lighting and completely finishing the portion of Ferndale Road between Cricklade Road and the Brook, for the Corporation. Mr. H. J. Hamp, borough surveyor:—

| | £ | s. | d. |
|---|---|---|---|
| T. Free & Sons, Maidenhead | £1,383 | 5 | 5 |
| E. Ireland, Avenue Road, Trowbridge | 1,375 | 13 | 2 |
| G. Whitehead, Beatrice Street, Swindon | 1,295 | 6 | 6 |
| T. Free & Co., Fishponds, Bristol | 1,163 | 13 | 10 |
| Free Brothers,* Marlborough | 1,049 | 10 | 2 |

* Accepted. [Surveyor's estimate, £1,144 4s. 8d.]

**Strawberry Hill (Twickenham).**—For proposed additions to the Metropolitan City Police Orphanage, for the Board of Managers. Mr. Fred. W. Foster, architect, 41 Bedford Row, W.C. Quantities by Mr. Ernest Ide:—

| | £ |
|---|---|
| Campbell, Smith & Co. | £6,990 |
| Messum & Co. | 6,802 |
| F. Bush | 6,765 |
| Oldridge & Sons | £6,668 |
| J. C. Richards | 6,565 |
| Lane & Sons* | 6,375 |

* Accepted.

**Ventnor, I.W.**—For the erection of stables, &c., at Steephill Castle, for Mr. J. Morgan Richards. Mr. Theodore R. Saunders, architect, Belgrave Chambers, Ventnor:—

| | £ | s. |
|---|---|---|
| A. Daish, Ventnor | £3,175 | 0 |
| H. Linington, Wroxall | 2,973 | 12 |
| H. Ingram & Sons, Ventnor | 2,860 | 0 |
| A. Sims,* Ventnor | 2,653 | 0 |

* Accepted.

**Walthamstow.**—For the erection of a new billiard-room, &c., at "The Limes." Messrs. George Baines & Son, architects, 5, Clement's Inn, Strand, W.C.:—

| | £ | s. |
|---|---|---|
| S. J. Scott | £475 | 0 |
| Battley, Sons & Hollness | 370 | 0 |
| Sands, Palmer & Co. | 350 | 0 |
| Thomas Durden,* 1, Oliver Road, Walthamstow | 274 | 10 |

* Accepted.

**West Ham.**—For making-up the following streets, for Town Council:—Pudding Mill Lane (part), Barber's Road, Torrens Road, Torrens Square, Perth Road (part). Mr. John G. Morley, borough engineer:—

Group 1.

| | £ | s. | d. |
|---|---|---|---|
| J. Jackson, Plaistow | £3,691 | 3 | 4 |
| D. J. Jackson, Barking | 3,440 | 14 | 8 |
| T. Adams, Wood Green, N. | 3,225 | 6 | 3 |
| W. Griffiths, Ltd., Hamilton House, E.C. | 3,137 | 4 | 6 |
| G. J. Anderson,* Poplar | 2,915 | 4 | 11 |
| Parson & Parsons, Ilford | 2,928 | 10 | 0 |

Group 2.

| | £ | s. | d. |
|---|---|---|---|
| D. J. Jackson | 1,791 | 10 | 0 |
| W. Griffiths | 1,758 | 6 | 6 |
| T. Adams | 1,749 | 3 | 2 |
| J. Jackson | 1,629 | 2 | 3 |
| Parsons & Parsons | 1,627 | 0 | 0 |
| G. J. Anderson* | 1,522 | 10 | 10 |

* Accepted.

## BUILDERS' JOURNAL EMPLOYMENT REGISTER—(*Continued*).

### FOREMEN.

62.—Working Painter's Foreman. Wide ex. of artistic decorations. Last sit. 4 yrs.
71.—Shop Foreman. Age 44. Good refs. 15 yrs. ex. in good West End shop.
77.—Foreman of Smiths, Fitters, &c. Excellent refs. Draughtsman and estimator, ironwork and steel structure.
85.—Shop Foreman of Joiners. Good genl. experience, good refs.
2.—General Foreman (46). Good refs. Town or country.
5.—Builder's or Contractor's Foreman. Varied experience and good refs.

### JOINERS.

6.—Joinery, Carcassing, Stairs wanted.
8.—Machinist Joiner can take charge, work spindle, also tenoning. Good refs., 22 yrs. ex.

### LABOURERS.

75.—Labourers. Mechanics' handy men. Good reliable experienced men; any number at liberty.

### MACHINISTS.

94.—Machinist (27), good general experience, knowledge of all branches.
100.—Machinist Foreman. 38. Long ex. in all branches, good refs.

### MISCELLANEOUS.

92.—Electrical Engineer can undertake class of electrical work.
93.—Architect prepares wkg. drawings, details, specifications, low terms.
98.—Quantity Surveyor can prepare quantities, estimates, accounts, &c., for architects; accuracy and despatch.
7.—Evening Work wanted by neat draughtsman, wkg. drawings, details, tracings, specifications, quantities, &c.

### PLUMBERS & FITTERS.

63.—Plumber. Improver. Mod. s. Wants constant job. Town or country.
68.—Plumber. Good refs. All branches.
14.—Plumber, gas and hot-water fitter, age 24, wants job.

### QUANTITY SURVEYOR.

12.—Quantity Surveyor, thoroughly reliable, and with good all-round ex., good refs., mod. s.

### TIMEKEEPER.

64.—Timekeeper. Tall. Excellent refs. Educated. Would accept job as Watchman or Messenger.

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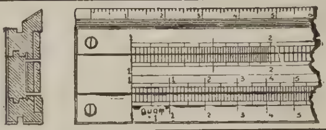

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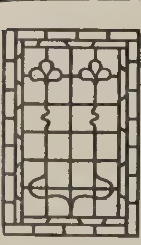

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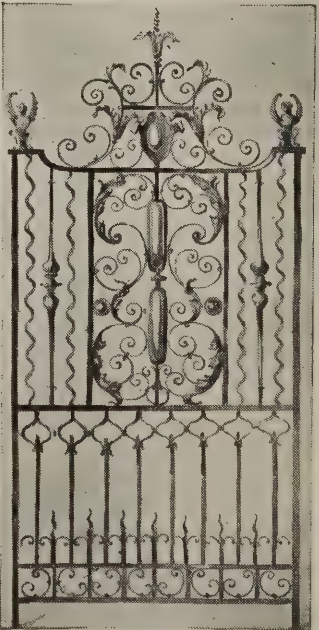

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# THE BUILDERS' JOURNAL AND ARCHITECTURAL RECORD.

December 16, 1903. Vol. 18, No. 462. 6, Great New Street, Fetter Lane, E.C.

## Summary.

The Department of Egyptian Archæology of Liverpool University has completed arrangements for a season's excavations at Beni Hasan. (Page 268.)

The Majestic Hotel is to be built on the site of St. James's Hall, Piccadilly, London. (Page 268.)

The project for public baths at George's Dock, Liverpool, has been shelved again. (Page 268.)

Within the small area of the City there were 115 parishes, each having its church; with Henry I. the practice of uniting them began; and the number of churches is now fifty-two. The oldest, largest and longest is St. Bartholomew the Great. (Page 258.)

Mr. Heathcote said in his paper on English and American methods of building that, given the same rate of payment and the same conditions, an English contractor would work as quickly, as well, as thoroughly and as satisfactorily as an American, and better in some manners and ways which we in this island prefer. In an ordinary building, in common brickwork, if a bricklayer averaged 700 English bricks per day of ten hours he was doing a fair day's work for 8s. 4d. (Page 264.)

A correspondent at Durban states that 500 skilled mechanics are out of work there, and that in Cape Colony 2,000 are unemployed, for whom the Government have had to start relief works. (Page 264.)

An exhibition of decorative and applied arts, processes and manufactures is to be held at Manchester next September. It is being promoted by the National Association of Master House-Painters and Decorators. (Page 262.)

M. Homolle has been made an honorary doctor of letters by the University of Cambridge. Last week he lectured on the excavations at Delphi before the Classical Society at Cambridge, when Dr. Waldstein took occasion to say that at one time it looked as if he, not M. Homolle, was to undertake the excavations; but he did not regret that they had been entrusted to their French colleague when he saw the splendid way in which the work had been carried out and the support given to it by the French Government. (Page 262.)

In a paper on the Royal Victoria Hospital, Belfast, which he read before the R.I.B.A. on Monday evening, Mr. William Henman, F.R.I.B.A., cited, in support of the plenum system adopted, the statements of Professor Byers, who had said that "whether from the point of view of administration, ease and comfort of patients, or adaptability to clinical teaching, he knew no hospital equal to it." There are 300 beds. The cost has been a trifle over £300 per patient's beds. (Page 263.)

**Trafalgar Square Subways.** In connection with the Trafalgar Square station of the Baker Street and Waterloo Railway, which is now well on its way towards completion, a large booking-hall with subways to the several corners—like that at the Bank station—will be constructed. This will be situate to the east of the Monument, about 17ft. below the ground. One subway will extend to the Charing Cross Post-Office corner, another will come out by the Grand Hotel, while the the third will run across to Trafalgar Square Buildings. These subways will doubtless be as great a convenience as those at the Bank.

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**The Granite Trade and Protection.** In 1892 the Aberdeen granite trade with America amounted to £123,565; last year it was £19,710. And what was the reason? Ten years ago the tariff on the imported goods was 20 per cent.; now it is 50 per cent.; and behind that tariff wall the American polishing trade has grown, and will grow, though it must certainly be admitted that there are some kinds of granite obtained in this country which are very popular with Americans, and which cannot be got in America. Now it is generally admitted by free traders and protectionists that our own supply of granite is at present insufficient for our demands, and consequently we are driven to Norway, Sweden and Russia for raw material; though one would suggest that Ireland has possibilities in this direction; we can hardly look to our colonies for any, whatever quantity may be available there, for it is not conceivable that it would pay to bring granite from such a distance. This year £50,000 worth of rough granite has been landed at Aberdeen from the three countries named above; and, as another fact bearing on the question, at the most important granite quarries in this country (so far as the polishing trade is concerned)—those at Rubislaw—for every 1,000 tons of material suitable for polishing 12,000 tons of building stones have to be disposed of. The free-trade argument has been put forward on the assumption that the imported granite would be taxed. But would it? Are bales of cotton "partly-manufactured" goods because they have undergone picking and shearing? We know they are not. But we may well ponder over the fact that Sweden sends us yearly £300,000 worth of setts and kerbs, manufactured goods, duty free. We may well think over the significance of this, and bear in mind, as an example, that the Dartmoor quarries have lost a considerable portion of their trade in these setts and kerbs because Norwegian quarry-owners can pay their workmen less money and send their finished material into our ports without paying any duty on it.

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**The Fire at Sandringham.** It was properly in accordance with journalistic precedent to ascribe the fire at Sandringham to "the fusing of the electric wires," an expression possibly intended to mean the "blowing" of the "fuses," for anyone with an elementary knowledge of house wiring knows that "fuses" (generally of lead wire) are put in the circuit for the specific purpose of preventing an excess of current passing through the system and overheating the wires, which might set light to any combustible material surrounding them. The fire at Sandringham, however, had nothing to do with the electric-light wires. As most people are now aware, it was caused by the concrete under the grate in Miss Knollys's room getting hot enough to ignite the beam underneath it in the Queen's bedroom. Of course every sensible architect and builder will ask why such construction should have been passed: but Crown buildings are not subject to the by-law which stipulates that no woodwork shall be within 18in. of the back hearth. The rooms were renovated recently and "well fires" installed: but whoever was responsible for this work was either incompetent or negligent, for it is folly to put a grate over a beam. Builders in days gone by used to be fond of carrying a beam through the chimney, forgetting that soot is only partly-burnt coal. Since then we have grown wiser in the matter of fire prevention; yet even now the Queen's life must be endangered by a gross mistake in fixing a fire on a thin bed of concrete carried by a wood beam. The person who neglected to follow the proper construction with a trimmer arch deserves to be severely censured. After the fire broke out the ceiling of the Queen's room collapsed, but this was due to the water, not to the fire.

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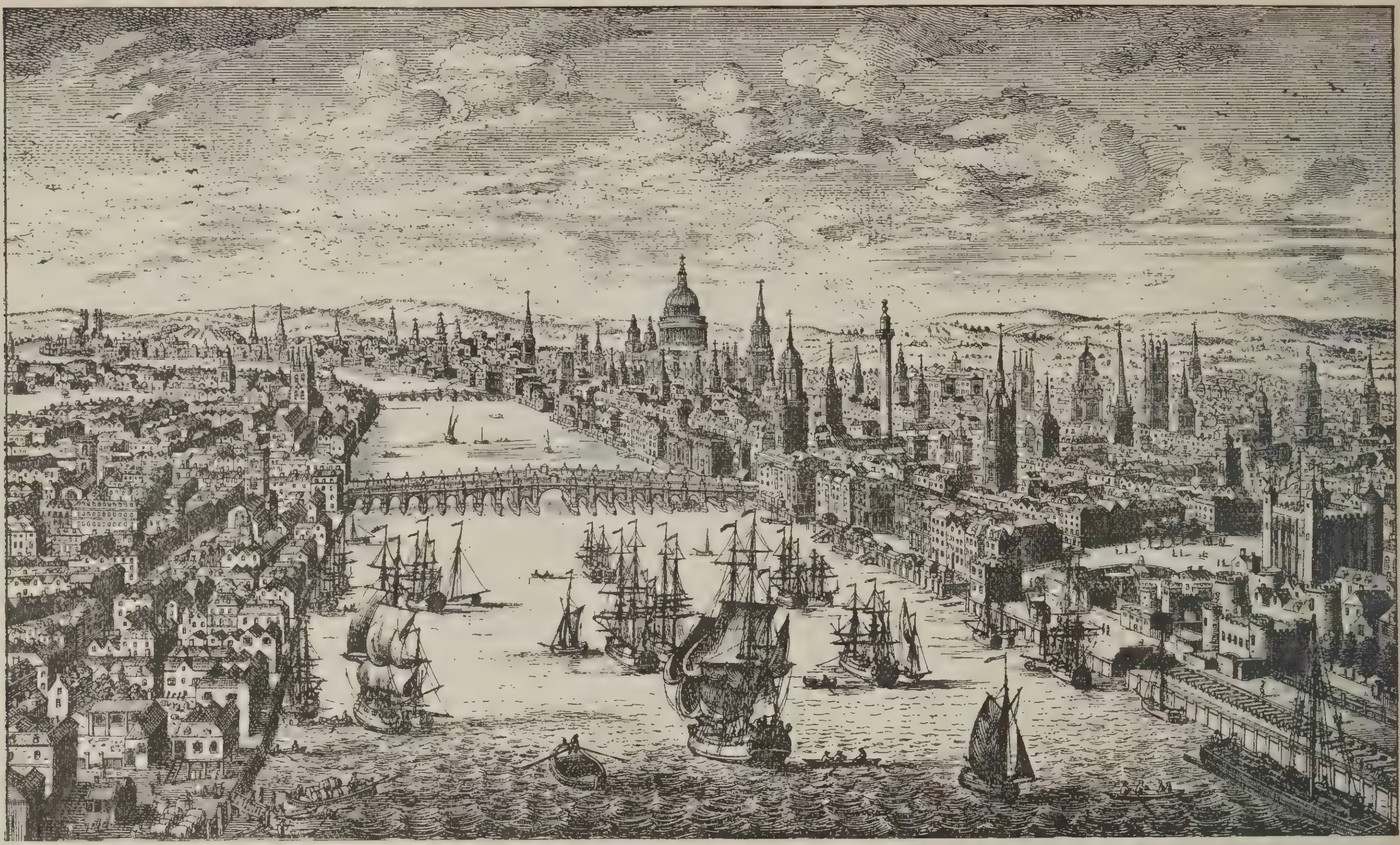
**A Standard Chain.** When Parliament reassembles in February next a new 100ft. measurement will have been laid down by the Standards Department of the Board of Trade, on the west side of Westminster Hall. Westminster Hall was secured in order that the measurement might be under cover. For many years past a similar measurement has been in existence in Trafalgar Square, but constant exposure to the atmosphere makes it difficult to ensure that degree of accuracy which is possible in a covered building. The new measurement has been copied in steel by the United States for the Capitol at Washington.



GENERAL VIEW OF THE CITY OF LONDON, FROM AN OLD ENGRAVING PUBLISHED AFTER 1759, SHOWING OLD LONDON, BLACKFRIARS AND WESTMINSTER BRIDGES.

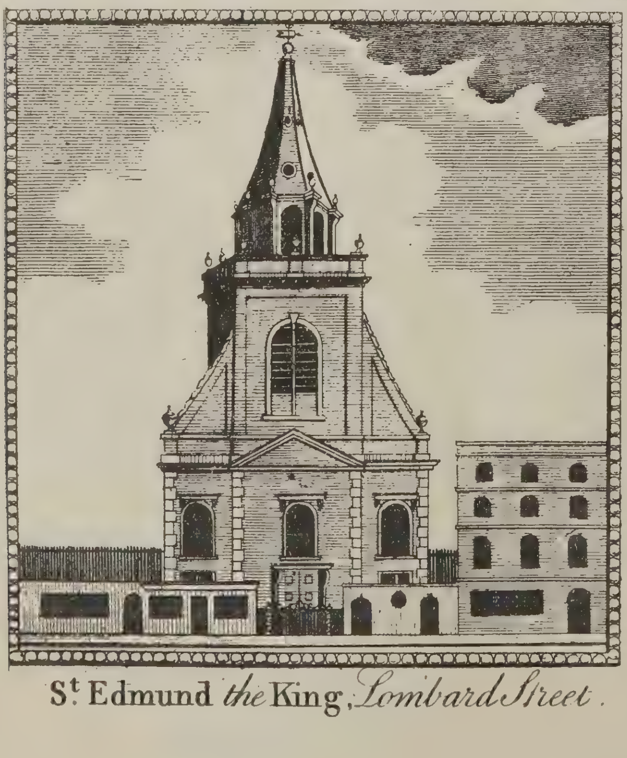
# NOTES ON THE CITY CHURCHES.—I.

By F. HERBERT MANSFORD.

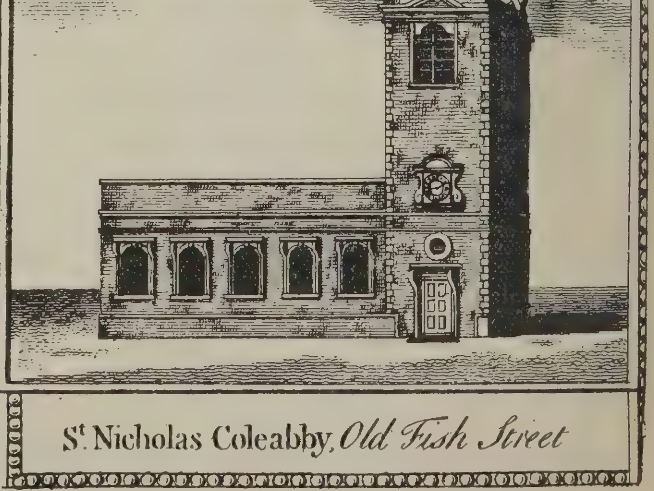
READERS of the "Spectator" may remember that when Sir Roger de Coverley is being rowed to Vauxhall he bids Addison observe "how thick the City is set with churches, yet there is scarce a single steeple west of Temple Bar! A most heathenish sight," says Sir Roger, "there is no religion at this end of the town." Two centuries have passed; the City churches are far less conspicuous in the prospect; there are about as many sacred edifices west of Temple Bar as east of it, and one of them occupies part of the site of Vauxhall Gardens.

Within the small area of the City of London there have been 115 parishes, each with its separate church and establishment of priests, and these besides the cathedral, various priories, nunneries and chantry chapels. Several of these buildings disappeared in the spiritual flames of the Reformation and more in the material ones of 1666; so that at the end of the seventeenth century, many parishes having been amalgamated, there were only seventy-three churches. So far as London is concerned, the practice of uniting parishes dates from the time of Henry I., who, soon after 1100, joined four together in the foundation of the Priory of the Holy Trinity, Aldgate. The culmination of this policy, for the present, is to be found in the seven parishes which look to St. Margaret, Lothbury, as their spiritual centre.

The number of the City churches is now fifty-two, but of these St. Benet's, Paul's Wharf, is allotted to a Welsh congregation, St. Bartholomew the Less is happily appro-



St. Edmund *the* King, *Lombard Street.*



St. Nicholas Coleabby, *Old Fish Street* priated by the staff and inmates of St. Bartholomew's Hospital, and St. George, Botolph Lane, is closed and awaits demolition. This number, however, does not include the church in Austin Friars occupied by a Dutch congregation, the chapel of the Mercers' Company, or the Temple Church, for these are not parochial; nor St. Peter's ad Vincula and the chapel of St. John, which are not strictly in the City, but within the precinct of the Tower.

### The Dedication of the Churches.

The names of the various churches often appear strange to those who live in more prosaic parts of the Metropolis. As there have been no fewer than fourteen churches dedicated to St. Mary, eight to All Hallows, and seven to St. Michael, it is not surprising that surnames became necessary, and hence we get—St. Andrew by the Wardrobe (*i.e.*, by the King's Great Wardrobe, recalling the time when the monarchs stayed in the City and at the Tower); St. Andrew Undershaft (*i.e.*, by the tall maypole); St. Mary Somerset (a corruption of Somer's hithe or Somer's landing place); St. James Garlickhithe (doubtless the congregation were impressed by its proximity to the wharf where garlic was landed); St. Mary Woolchurch Haw and St. Mary Woolnoth (both close to the woolmarket), and St. Margaret Pattens (from its proximity to the lane where pattens were mostly made). St. Christopher-le-Stocks recalls the time when the site of the present Mansion House was an open market-place in which the stocks were fixed.

Another class of surnames is derived from those who founded or endowed the churches; such are St. Benet Fink, St. Benet Sherehog, St. Mary Mountlaw, St. Martin Orgar, St. John Zachary and St. Margaret Moses. It is perhaps as well that the somewhat spendthrift example of giving a double dedication to the church of St. Anne and St. Agnes, Aldersgate, was not followed; no other church in the City has enjoyed the patronage of two saints at one and the same time, although the names of a few parishes have been altered to "Holy Trinity" and to "Christchurch."

The dedication is sometimes marked externally, as by the figure of St. James upon the clock on Garlick Hill, by the gridiron vane of St. Lawrence Jewry, and the gilded key above St. Peter's, Cornhill. St. Andrew clasps his X upon the churchyard gates in Holborn Viaduct, while the Madonna and Child shelter in the niched keystone of St. Mary the Virgin, Aldermanbury.

### The Parishes.

There are some curious points concerning the parishes of the City. The most populous is St. Botolph's, Aldgate, with 4,675 inhabitants at the last census; the least populous is St. Peter's, Paul's Wharf, with sixteen only. The parish of St. Botolph, Aldgate, is also the largest in area, and measures over half a mile from north to south. The smallest is probably that of All Hallows, Honey Lane, its greatest dimension being 70yds. The parish of St. Christopher-le-Stocks is entirely occupied by roadway and parts of the Bank and Royal Exchange. Its population is augmented by a proportion of the forty soldiers who every night keep watch over the Old Lady of Threadneedle Street. Cannon Street Station absorbs almost the whole of the parishes of All Hallows the Great and St. Mary Bothaw. The parish of St. Andrew, Holborn, is mostly without the City, although the church is entirely within it. In Kelly's "Directory," however, it is omitted from the "City" churches and placed with the "Metropolitan." Cripplegate was similarly divided until the building of St. Luke's, Old Street, in 1732. St. Sepulchre's parish is somewhat anomalous, inasmuch as previous to the Reformation it was partly within the walls and partly without. Henry VIII. severed the part within and attached it to his newly constituted Christchurch. But St. Sepulchre's was only banished from the City for a time. When the boundaries were extended beyond the walls about four-fifths of the parish were included, but two extra churchwardens are still returned to represent the remaining fifth, or "Middlesex side."

Until 1845 thirteen parishes styled "peculiars" were under the direct administration of the Archbishop of Canterbury, and these parishes formed no part of the diocese of London. St. Dunstan's-in-the-East was one of these, and this explains why the head of Archbishop Manners Sutton forms one of two corbels on the east wall of the church, the other being George III.; the body of this church dating only from 1821.

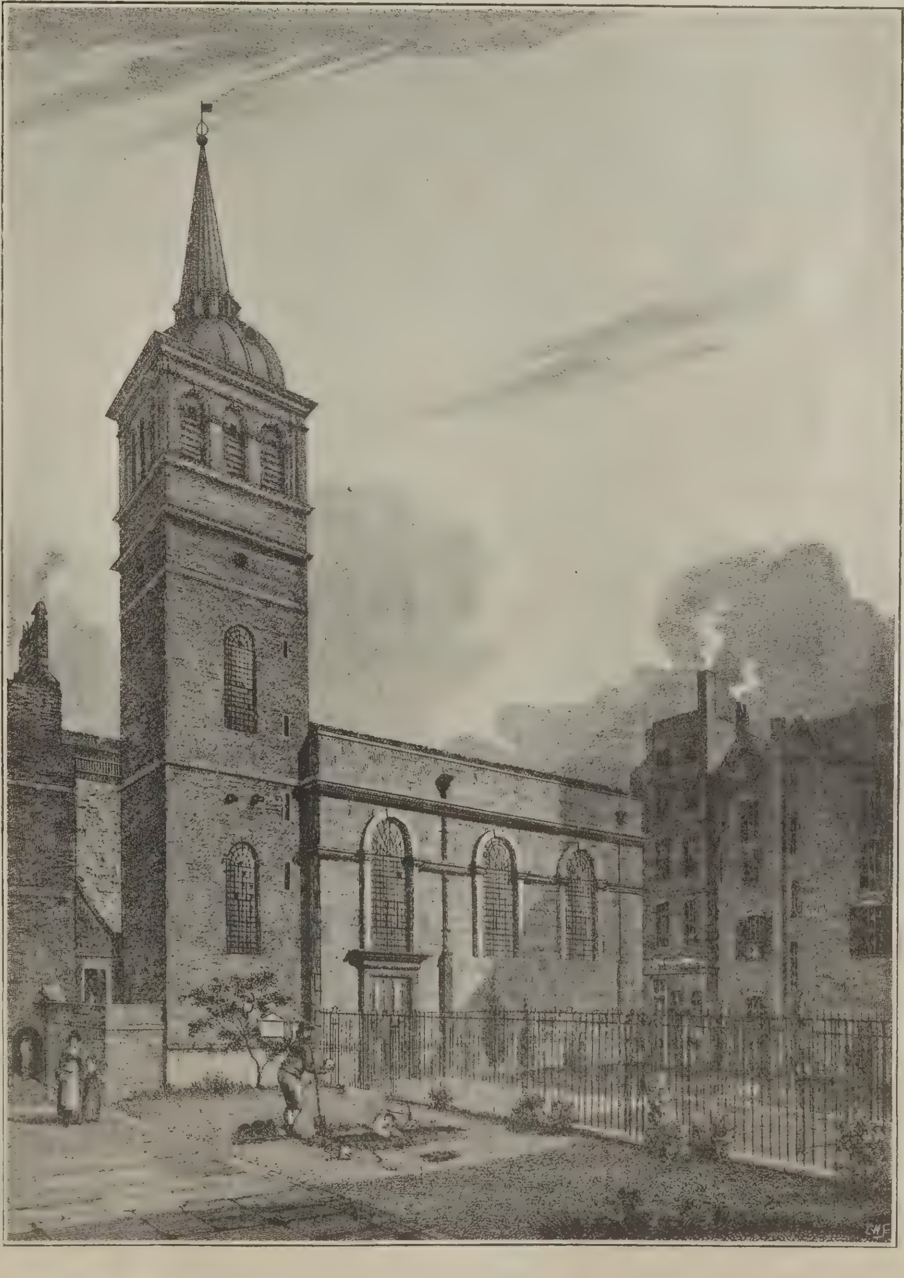
### The Age of the Churches.

The oldest church is that of St. Bartholomew the Great, the structure of which is mainly twelfth-century workmanship, but St. Peter's, Cornhill, claims to have been founded in the second century, and contains an inscription to that effect. The crypt of St. Mary-le-Bow and the nave piers of All Hallows, Barking, date from Norman times. Mr. George Birch has told us in his book that pieces of Purbeck marble shafting have been discovered built in the walls of St. Nicholas Cole Abbey, a testimony to the antiquity of the former church borne out indirectly in a reference by Stow. The only visible remains of the Early English period of architecture are to be found at St. Bartholomew the Great and at St. Helen's, Bishopsgate. In the former are clustered shafts just within the western porch, and there is the gateway opening on to Smithfield; while at the latter church are a window in the north wall, an aumbry near the pulpit and two doorways.

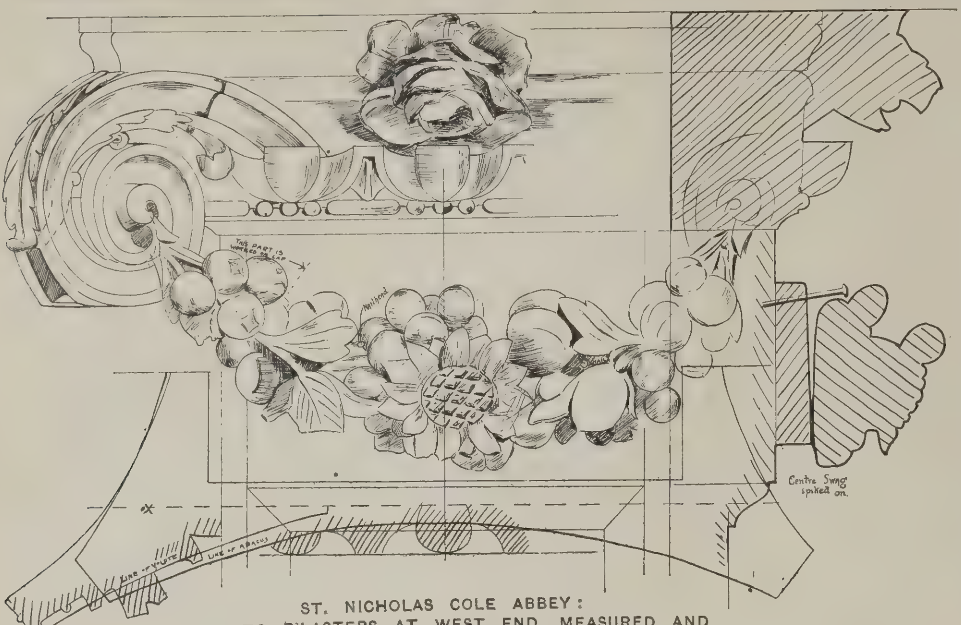
Dating only from 1777 is St. Alphage, London Wall, erected from the designs and at the cost of Lord Mayor Staines; while Holy Trinity, Gough Square, was put up in 1838 as a chapel-of-ease to St. Bride's parish.

### Comparison of Size.

St. Bartholomew the Great is at once the largest and longest church in the City, covering an area of 13,440 sup. ft. and measuring even in its naveless condition 210ft. between the west porch and the east end of the Lady Chapel. St. Sepulchre's ranks next in both respects, being about 13,080ft. in area and 150ft. long. Christchurch has a continuous width of 81ft, due to Wren having accepted the setting-out of the mediæval church as the basis of his own design, a fact conclusively proved by the remains of the mediæval buttresses existing just below the



SOUTH VIEW OF ST. PETER'S CHURCH, CORNHILL (1825).



ST. NICHOLAS COLE ABBEY: CAP TO PILASTERS AT WEST END. MEASURED AND DRAWN BY GEORGE FLETCHER.

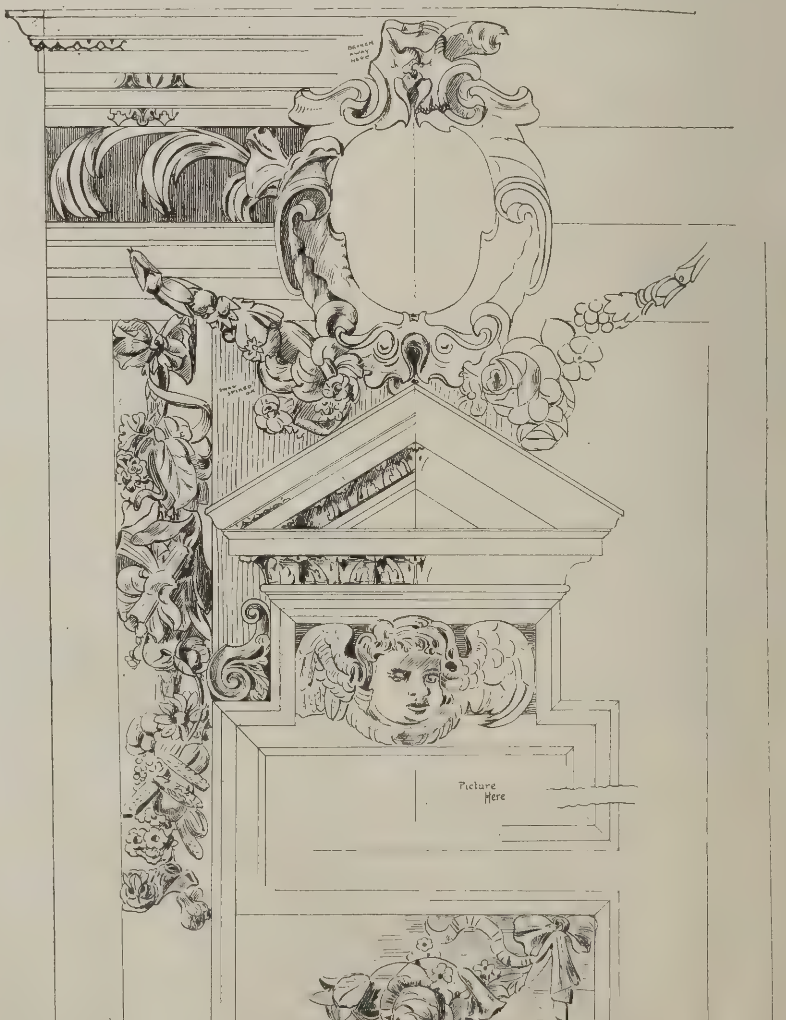
present ground level.* The edifice appears particularly spacious, yet covers only 9,000 odd sup. ft., or about half the area of the old monastic church. At the other end of the scale we find St. George, Botolph Lane, and St. Ethelburga, Bishopsgate, both covering 1,800 sq. ft. only, but the closing of the former church and the addition of a new vestry to the latter probably entitled All Hallows on the Wall to be considered the smallest church within the City.

### Plan.

A generation ago there was no group of churches in the world exhibiting a greater variety of plan than that afforded by our own City of London. The fact is more remarkable when we remember how great a proportion is due to a single brain. Wren was the first to break away from the old tradition; for the two churches which are attributed to Inigo Jones† displayed the usual disposition of nave and aisles. Wren's first completed church, St. Nicholas Cole Abbey, still remains one of the best examples of the simple oblong room type, although this is, perhaps, partly due to its present judicious decoration. He introduced the Greek cross plan, as in St. Mary-at-Hill and St. Martin, Ludgate, and various other forms often suggested by the site. St. Olave's, Old Jewry, was slightly coffin-shaped, and St. Benet Fink was given the form of a decagon. This latter church stood where is now Mr. Peabody's statue, and is not even kept in memory by a tree, although the paved enclosure is sufficiently spacious. St. Mary Abchurch is practically square and is roofed with a dome carried entirely by the walls, as opposed to St. Stephen's, Walbrook, where the dome is everywhere supported upon columns. At St. Martin's, Ludgate, the greater dimension of the church is that from north to south, but the altar is placed in its usual position and the whole of the south side of the church is appropriated by vestibules. The greater dimension of St. Edmund the King and Martyr is also from north to south, but the altar is in this case placed at the north, opposite the entrance. It would seem that this church might well have been built with its longer axis towards the street, for the accompanying illustration (on p. 258) shows that there was formerly a churchyard or other open space to the west. This suggests that the feeling in favour of orientation was not very strong towards the close of the seventeenth century,* and may have been overridden by Wren's natural desire that the tower should terminate the northward vista from Clement's Lane. Another possibility is that the medieval church was not orientated and that Wren built upon old foundations.

St. Stephen's, Coleman Street, presents a very irregular four-sided figure, and is an interesting example of the extent to which obliquity of plan may be missed in perspective. But in a few instances the effect of a church is distinctly marred by the skewness of the east wall; the fine interior of St. Mary Aldermary is a case where the north wall of the short chancel is a few feet longer than the south. Investigation would probably prove, if it has not already done so, that the lower parts of these walls are those of the mediæval structure. At St. Lawrence Jewry, Wren took pains to minimize the obliquity and thickened the north end of the east wall so that, although the church was built up to the frontage line of the street, internally the distortion was less. He did not hesitate to pierce this wall with windows, relying as he did upon the splayed jambs to disguise the really considerable divergence of the internal and external faces. In many of the churches angles which one assumes to be right angles are really far from being such.

St. Magnus, London Bridge, covers a symmetrical site, excepting that its walls converge slightly towards the east. Yet Wren has placed the columns in an irregular fashion, the second bay from the tower being about double the width of those on either side. In the north aisle of the church there was a door formerly opening from Thames Street, now built up. This entrance doubtless included an oak lobby within and a second door. Supposing the colonnade to have been equally spaced, a reference to the plan



ST. NICHOLAS COLE ABBEY, QUEEN VICTORIA STREET: PORTION OF REREDOS.

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* Wren also availed himself of the red and grey marble paving of the old church; and as the walls are of rubble masonry, and not squared ashlar, it is likely that they too are largely of old material.

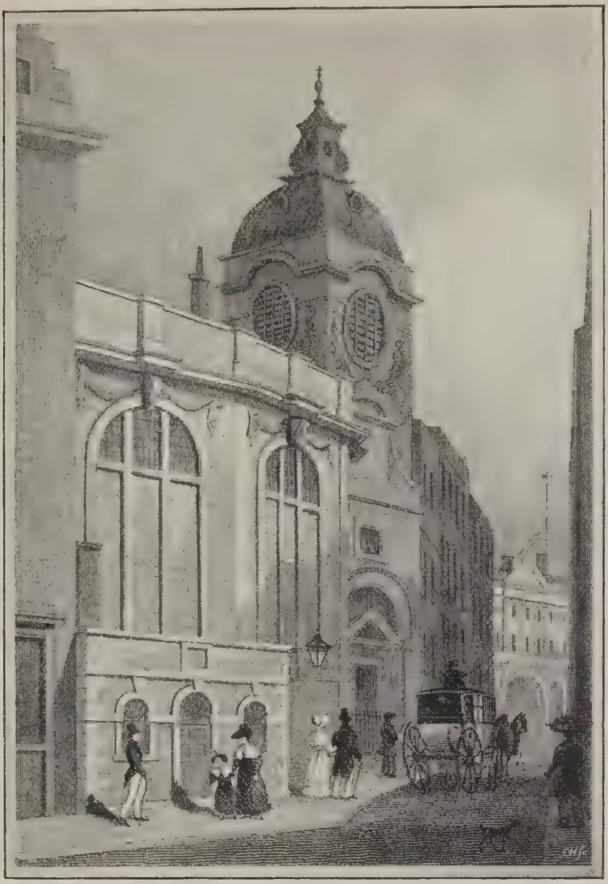
† St. Katherine Cree, Leadenhall Street, and St. Alban's, Wood Street. The latter church was destroyed in the Great Fire and rebuilt by Wren.

* The altar of St. Botolph's, Aldgate (erected 1744), is also at the north end of the church.

will show that a column at x would have been awkwardly placed in relation to the entrance, but it is strange that Wren's setting out of the plan involved this inconvenience. It is worth noting that the windows of the aisles are placed with little reference to the position of the columns.

St. Sepulchre's is curious in this respect, for the windows of the aisles not being opposite to one another, the columns of the nave arcade sometimes come opposite a pier and sometimes a window. When the church was repaired after the Great Fire, plaster vaults were introduced, carried in the aisles upon transverse arches; and in order to obviate the awkwardness of these sometimes springing from the window heads, a bold cornice was introduced and carried impartially over window and wall, thus disconnecting the transverse arches from the solids or voids below.

Wren often entirely put aside the mediæval conception of a nave with parallel aisle or aisles, and considered what geometrical figure would best fit the site. This vigorous freedom produced the decagon of St. Benet Fink and the elongated octagon of St. Antholin, both of which examples are now destroyed. Such original plans naturally exercised his invention in the matter of roofing; hence the unrivalled variety displayed in his church designs.



ST. BENET FINK, THREADNEEDLE STREET. (DEMOLISHED 1844.)

It is strange that no city church of Wren's displays an apse—possibly his stated preference for straight lines over curved ones will explain this. That at St. Paul's Cathedral was doubtless due to his desire to make the eastern arm more distinct from the transepts, and the apse at St. Clement Danes is probably due to its position at a bend of the Strand.

Among churches not by Wren may be noted St. Martin Outwich, which was elliptical; St. Peter le Poer, circular and with an altar recess to the N.W.; St. Dunstan's-in-the West, octagonal and with the altar at the north; St. Bartholomew-the-Great, once cruciform and apsidal, but now more like the letter **T**; and St. Helen's, with its double naves and eastern chapels.

Perhaps the most remarkable is Holy Trinity, Gough Square, a chapel-of-ease to St. Bride's. On plan this church takes the form of a hexagon with four excrescenses forming the chancel, the vestry, the organ-chamber and the tower.

(*The next article will appear on January 13th.*)

## Bricks and Mortar.

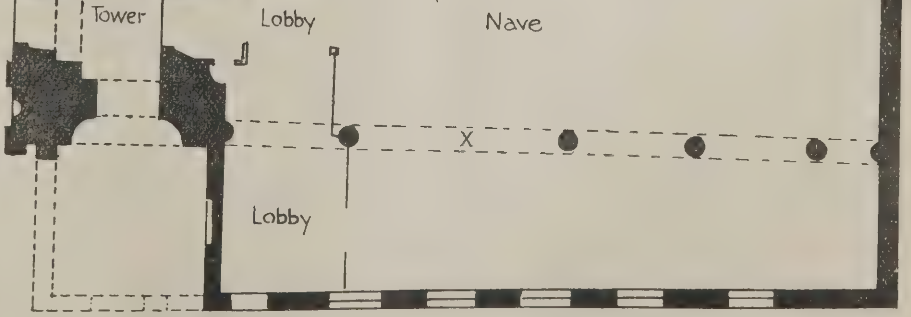
**Aphorism for the Week.**

*A sculptor, to meet the demands which our preconceptions make upon him, should be even more indispensably a poet than those who deal in measured verse and rhyme.*—NATHANIEL HAWTHORNE.

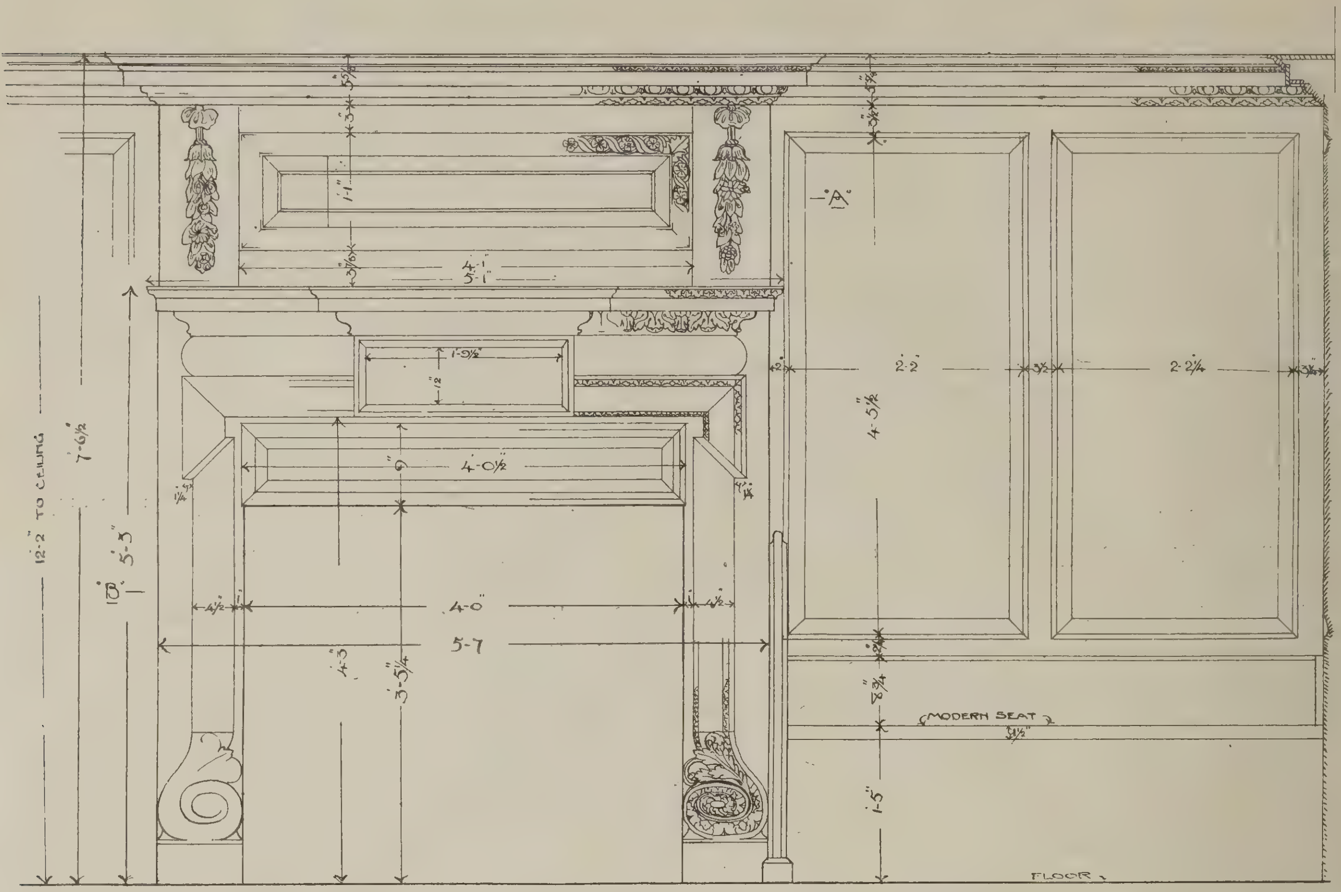
**Our Plates.** ELECTRA HOUSE, FINSBURY PAVEMENT, E.C., is one of the great new blocks of the City. It is the head-office of the Exchange Telegraph Co., symbolized by the globe that crowns the centre. The building is carried out in grey granite with dark granite for the ground storey. It is richly carved in parts, especially around the main entrance, this being the work of Mr. Pomeroy. Mr. John Belcher, A.R.A., was the architect. Further particulars and illustrations were published in THE BUILDERS' JOURNAL for August 20th, 1902.—Mr. Raine's drawing of Chartres is referred to on p. 266.

**Colour Photography for Architects.** ON Wednesday last, before the A.A. Camera and Cycling Club, Mr. F. J. Steadman, of the Lumière N.A. Co., Ltd., gave a demonstration of colour photography. He described the process advocated by the Lumière Co. in which three negatives are taken, the first through a blue screen on an ordinary plate, and the others through red and green screens respectively on specially-prepared plates. These negatives are printed on a bichromated gelatine emulsion spread on celluloid or talc, giving a barely visible image, which is developed in hot water and fixed in hypo in the usual way, leaving a clear film with an almost invisible image. The film is then dried and dyed in a complementary dye—that is, the print from the negative taken through the blue screen is dyed green, that through the red screen blue, and that through the green screen red. These prints are then superimposed and the dyes adjusted, the blue print being taken as the basis and the other dyes either intensified by further dyeing or reduced by washing until a perfect transparency in natural colours is obtained. For prints, a thin flat bromide is made from the negative taken through the red screen and toned with iron to a blue tint. Dyed positives on a stripping film are then made from the other negatives and squeeged one at a time to the blue print, dried and the talc support stripped; the result being a paper print in natural colours. The exposure required for the three negatives is, through the blue screen, four times the ordinary exposure; through the green screen six times; and through the red from eight to ten times. A white object should be in the pictures as a guide when developing, because its density will be the same in all three negatives, and the negative taken through the blue screen should be taken as the standard for density when developing, as it is less sensitive to the ruby light of the dark-room. Mr. Louis Ambler, in proposing a vote of thanks to Mr. Steadman, referred to the crudeness of colour and lack of atmosphere in the photographs of landscapes shown, and was informed that this was at present unavoidable, but, very curiously, was only found in landscape work. Mr. Stonhold, in seconding the vote of thanks, suggested the use of the process in photographing stained-glass and other coloured decorations in buildings.

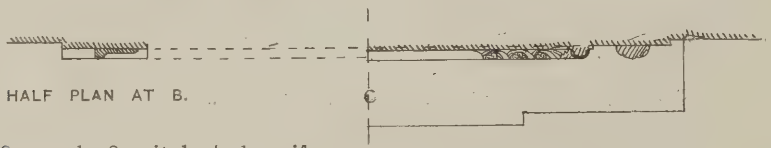
**M. Homolle.** M. HOMOLLE has been made an honorary doctor of letters by the University of Cambridge. He was at Cambridge on Friday, when he described his excavations at Delphi before the Classical Society Dr. Waldstein, who was present, said that at one time it was very doubtful whether he or M. Homolle was to excavate



PLAN OF THE CHURCH OF ST. MAGNUS, LONDON BRIDGE.



ST. NICHOLAS COLE ABBEY: VESTRY FIREPLACE (BY WREN). MEASURED AND DRAWN BY GEORGE FLETCHER.

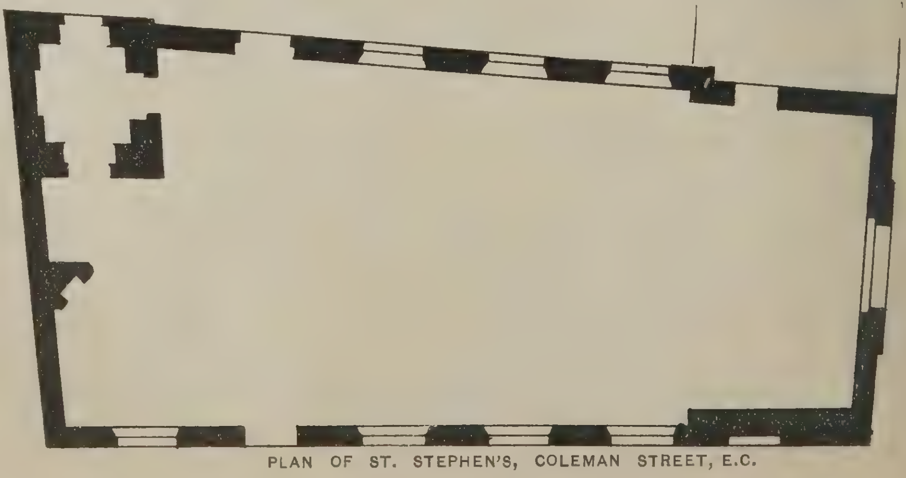

HALF PLAN AT B.

HALF PLAN AT A.

Delphi. In 1891 and 1892 it looked as if the concession was to be granted to him (Dr. Waldstein). But he did not regret that this most important task in archæology had been entrusted to the hands of M. Homolle when he saw the splendid way in which the work had been carried out by his French colleague and he realized the generous help which the French Government gave to the archæologist.

**County Laboratories.** New laboratories at Chelmsford have been erected by the Essex County Council at a cost of nearly £12,000 In the basement accommodation is provided for a working dairy of from fifteen to twenty churns. The milk from this dairy will go first into the receiving-room and there be treated in a pasteurizing machine, refrigerator and separator. Accommodation is also provided in the basement for the manufacture of soft and other cheeses, and there are likewise proper cheese-ripening rooms. On the ground floor is the entrance-hall, the agricultural room accommodating 150 students, the physical-room and two biological laboratories, common rooms for men and women, lavatories, &c. On the first floor is a chemical laboratory, balance and analyses rooms, a preparation room for students, lecture theatre, biological laboratory and bacteriological room and classroom for this department. The second floor gives staff accommodation. The buildings are intended to be a centre for agricultural and horticultural information for the whole county, as well as for extensive dairy work. They have been erected by Messrs. Shillitoe & Son, of Bury St. Edmunds, with the following sub-contractors:—Heating, Messrs. Beckett & Sons, Chelmsford; electric lighting, Messrs. Christy Brothers & Middleton, Chelmsford; laboratory fittings, Messrs Baird & Tatlock, of Hatton Garden, London; biological fittings, Messrs. Potter & Sons, Chelmsford; furnishing, Messrs. Wenley & Son, Chelmsford. Mr. Frank Whitmore, the county architect, designed the building.

**A Painters' and Decorators' Exhibition.** The National Association of Master House-Painters and Decorators of England and Wales holds its eleventh annual convention at Manchester next September. To mark its importance, and to provide funds for the equipment of the new School of Decorative Painting and the educational work of the Association, it intends to hold an important exhibition of decorative and applied arts, processes and manufactures, and for this purpose the St. James's Hall, Oxford Street, Manchester, has been secured. The exhibition will include furniture, carpets, hangings, furnished rooms, wallpapers, relief materials, paints, colours and varnishes, water paints, tiles, pottery, sanitary appliances, stained glass, &c. An important section of the exhibition will be devoted to "processes," where various handicrafts will be seen in actual operation, a never-failing source of interest to the public. Good music will be provided, and the endeavour will be made to attract the general public equally with those more directly concerned. The Right Hon. the Earl of Derby, K.G., has consented to become patron of the exhibition. All particulars may be obtained from the registered offices of the Association, 26, Oxford Road, C.-on-M., Manchester.


PLAN OF ST. STEPHEN'S, COLEMAN STREET, E.C.

# R.I.B.A.

### The Royal Victoria Hospital, Belfast.

A MEETING of the Royal Institute of British Architects was held on Monday evening at 9, Conduit Street, W., the president (Mr. Aston Webb) occupying the chair.

The death was announced of Mr. Charles Fowler, F.R.I.B.A., for many years surveyor to the Portland estate in London.

A paper on "The Royal Victoria Hospital, Belfast: Its Inception, Design and Equipment" was then read by Mr. William Henman, F.R.I.B.A.

Mr. Henman referred at the outset to the ventilation of the hospital, acknowledging his indebtedness to Mr. William Key, of Glasgow. The proved success of plenum ventilation, combined with antiseptic treatment, had suggested that it might be possible to dispense with the "pavilion" arrangement of wards, and advocating double wards divided longitudinally by dwarf partitions. This idea had seemed to the author altogether wrong, and he had said that instead of erecting detached pavilions of several storeys, it might be better to spread out the wards on one storey only, placed side by side and lighted by continuous lantern lights. Such an arrangement would secure greater comfort to the patients, simplify ventilation by mechanical means, and very considerably reduce corridor communication, as well as dispense with the inconvenience of staircases and lifts, thereby facilitating administration. For the accommodation of the staff there would be no objection to buildings of several storeys, but with all the patients compactly arranged on one floor-level their wants could be easily supplied, and other difficulties of the pavilion plan would be overcome.

When the author was requested to meet the Committee of the Royal Victoria Hospital, Belfast, he was questioned as to the practicability of constructing a hospital such as he had proposed. On attempting to fit together, on entirely new lines, the intricate requirements of a complete hospital for 300 patients and a large staff, he began to realize the difficulties he had imposed upon himself. With the assistance of his partner, Mr. Thomas Cooper, the plan in time, however, assumed the generally symmetrical arrangement in which it now appeared in the erected building.

The author referred to the opposition raised against the scheme before it was finally sanctioned by the Committee. Professor Byers, member of Council of the British Medical Association, and honorary member of the medical staff, averred that "when first he heard that it was proposed to place all the wards side by side without intervening open spaces, to light them principally from above, and to have no windows to open, it appeared to him so contrary to all his preconceived ideas on hospital design that he determined to oppose the carrying out of such a plan by every legitimate means, and to enable him to do so effectually he set about independently to study the subject in all its bearings; but, to his surprise, the more thoroughly he probed it the more and more convinced he became that Mr. Henman was right." [*]

The cost of the buildings, including all engineering requirements and a complete steam laundry, was but a trifle over £300 per patient's bed—proof that the arrangement of plan is capable of being carried out at an economical figure. The site is six acres in extent, to which another six is to be added. By keeping the main floor-level well above the ground adequate height is secured for the principal fresh-air duct, which runs under the main corridor, for the branch ducts conveying fresh air to the several wards and accessory rooms, also for a pipe-duct running parallel with the principal air-duct—a necessary provision, so that heat from the steam- and hot-water pipes may not penetrate the buildings during the summer months, and that convenient access may be obtained to all piping.

Opening directly from the hall opposite the porch entrance runs the main corridor from east to west, about 450ft. long and 9ft. wide. Branching southward are seventeen short corridors, giving access to as many wards, each with fourteen beds, with their accessory rooms, all practically under one roof. The eight wards to the east are for medical cases; then come eight wards for surgical cases, and one for gynæcological cases. To the north are two for ophthalmic cases.

Open windows with plenum ventilation are objectionable, and without open windows intercepting lobbies are an anomaly. By simple adjustment, air from sanitary turrets is prevented from entering the wards, air-pressure in their direction being maintained from the wards outwards. To the ward-kitchens no doors are provided. With plenum ventilation an equable temperature and freedom from draught are secured; consequently inner doors are required only for the sake of privacy or where difference of temperature is desired to be maintained.

Two small detached buildings at the west end of the site are for isolation purposes. They receive fresh air by a continuation of the main duct underground, and although at least 600ft. away from the fans, are amply supplied with fresh air.

The author showed sections through a portion of the ward-block to give a general idea of the method of lighting and of the construction adopted. The windows are not skylights, as generally understood, but may be more properly defined as clearstory windows, slightly sloping, and glazed with ½in. plate glass. The result is most perfect lighting to every portion of the building. Surgeons using the operating-rooms state that nothing could be better for their purpose: the light is ample, well-diffused and free from shadowing. An advantage of plenum ventilation is that the cubical contents of buildings may be very considerably reduced. Given sufficient floor-area for nursing and teaching purposes, the height of wards need be no more than appearance demands, and when lighted, as they are in this instance, the cubical contents are much reduced, being not more than two-thirds of what is ordinarily required.

Mr. Henry Lea, M.I.C.E., followed with a paper on the engineering work of the hospital, our report of which we are obliged to hold over till next week.

Sir John Holder proposed a vote of thanks, referring in terms of the highest praise to the system of plenum ventilation.

Dr. Childs doubted whether the system was the best possible for hospitals. Further discussion had to be deferred owing to the late hour; but it is hoped another meeting will be arranged.

The president announced that a business meeting would be held on January 4th, when resolutions by certain members for the appointment by the Institute of a committee to deal with architects' registration would be brought forward.

**Royal Academy Prizes.**—Mr. L. U. Grace has been awarded the gold medal and £200 travelling studentship for a design in architecture; and Miss L. P. Edwards a prize of £40 for a design for the decoration of a portion of a public building.

# Builders' Notes.

**A Provincial Building Trades' Exhibition** is proposed to be held in Sheffield next year from April 15th to 23rd.

**The new Schools, Ipswich,** are being warmed and ventilated by means of Shorland's patent Manchester grates, supplied by Messrs. E. H. Shorland & Brother, of Manchester.

**Scarborough Master-Builders' Association.**—At the annual dinner Mr. A. W. Sinclair, president, said he was glad to report that during the past year Scarborough had been free from strikes and lock-outs.

**The City Companies** intend to form a general register of those who have obtained certificates as competent classmen, and thus to form a medium between themselves and employers in order that they may the more readily secure work.

**Belgian Rails.**—At last week's meeting of the London County Council the Highways Committee was instructed to ascertain the number of hours of labour per week worked by the men employed by foreign firms in making rails for the Government, provincial corporations, and London tramways and railways; their rate of wages, and whether they worked on Sundays.

**New Roman Catholic Cathedral, Leeds.**—The whole of the ashlar facing for the new Roman Catholic Cathedral in Leeds, which is just being completed, was supplied by Messrs. B. Whitaker & Sons out of their Bramley Fall stone from their Hawksworth quarries, Horsforth, near Leeds. The same firm are also supplying this same class of stone for the facing of the new Church of the Holy Spirit, in Leeds. The former building has a face of sawn ashlar and the latter has a rock face.

**Institute of Sanitary Engineers, Ltd.**—On Saturday a meeting of members residing in Lancashire and the West Riding of Yorkshire was held at the Manchester School of Technology with the object of forming a centre in that district. The centre was declared duly formed, Dr. J. B. Wilkinson being elected chairman and Mr. H. L. Jaques (Manchester) vice-chairman for the ensuing year; who, together with the following members, will form the local committee:—Messrs. J. Ashton, Manchester (hon. local secretary); G. V. Blaikie, Manchester; P. Leonard, Great Crosby; P. Mooney, Manchester; J. E. Entwistle, Bolton; F. Cartlidge, Leeds; C. R. Southwick, Sheffield; J. M. Lindsay, Manchester; and J. J. Quirk, Leeds.

**Lead Glaze.**—Lord James of Hereford has just signed his final award as umpire in the arbitration on the use of lead-glaze in the making of pottery. The question was raised by the issue from the Home Office of special rules "for the manufacture and decoration of earthenware and china." The final award establishes a new rule 2, under which it is generally provided that after February 1st, 1904, no glaze shall be used which yields to a dilute solution of hydrochloric acid more than 5 per cent. of its dry weight of a soluble lead compound calculated as lead monoxide when determined in a manner prescribed by the rule.

**The Building Trade in Pietermaritzburg.**—A builder in Pietermaritzburg writes under date of November 13th: "This week's English papers say that a great demand exists for bricklayers and carpenters in South Africa, particularly in Pietermaritzburg, where buildings are alleged to be at a standstill for want of men. There is not a word of truth in such statements; the building trade is in a most deplorable condition. There are old-established firms in the town without a job in the shop and not a man on, except the foreman."

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[*] Asked recently for his personal experience of the working of the hospital, Professor Byers said that the building "more than fulfilled his expectations, the plenum system worked admirably; and whether from the point of view of administration, ease and comfort of patients, or adaptability to clinical teaching, he knew no hospital equal to it.".

**Building in the North.**—At the seventh annual meeting of the Tees-side and District Master-Builders' Association, held at West Hartlepool, it was stated that the building trade was slack, and poor prospects were held out for the coming year. The committee, together with the Federation, had discussed the matter at length, and the only solution appeared to be in asking the men to sacrifice a little, and agree to a reduction in wages with a view to lessening the cost of building.

## Correspondence.

### A Warning from South Africa.

*To the Editor of* THE BUILDERS' JOURNAL.

DURBAN, S.A.

SIR,—Those who say there is a good opening for smart men and women in South Africa know nothing whatever about the matter. There are more than 500 men, skilled mechanics, out of work in Durban alone. Men who have read such glowing accounts of South Africa in the papers at home have sold up their homes to come out here, as they thought to better themselves; but really to starve, through no fault of their own. Early in the morning I have met them coming out of the park, where they had been sleeping all night, because they have neither money nor work. A few of them have been lucky enough to get work at breaking stones for the Durban Corporation, and they are paid 4d. a barrow, breaking on an average ten barrow-loads per day. They do no get the money, but tickets, and live at the Durban Home, paying for their food and bed with these. In Cape Colony there are about 2,000 men out of work, and the Government have had to start relief works. It has been like this for the last three months.—Yours truly, A. ANGLING.

### An International Competition.

*To the Editor of* THE BUILDERS' JOURNAL.

AMERSFOORT (HOLLAND).

SIR,—The Dutch Government propose to hold an international competition for the International Court of Arbitrage building to be erected at the Hague, the gift of Mr. Carnegie. A committee has been formed of some of our well-known architects with certain Dutch members of the Court (Mr. W. Roëll as secretary). The Dutch architectural societies are urging this committee for a national competition, but in my opinion, as the building is to be of an international character, I think it should be kept for open international competition, judged by a select international committee, even though the majority be Dutch members. As a foreign architect-reader of your journal I thought this matter might be made known through your columns, as, of all other foreign papers I know of, your widely-spread paper is the best for the purpose.—Yours truly,

D. H. MIDDELBURG.

### Westminster Cathedral.

*To the Editor of* THE BUILDERS' JOURNAL.

EXETER.

SIR,—By a slip on p. 242 of your issue for December 2nd the great altar stone at Westminster Cathedral is referred to as of Aberdeen granite, whereas it is really a finely-axed block of Cornish granite, from the well-known quarries of Messrs. John Freeman & Sons, of Penryn, in that county. It measures 12ft. by 4ft. by 3ft. 6in. high.

The huge painted representation of the Crucified Christ—which is to be suspended aloft—is now on view within the building. It is to be regretted that the artist (at Bruges, I believe) should have produced a very small head, minus any neck, altogether out of proportion with the rest of the otherwise fine figure.—Yours truly,

HARRY HEMS.

## ENGLISH AND AMERICAN METHODS OF BUILDING.

By CHARLES HEATHCOTE, F.R.I.B.A.

*(Concluded from p. 254 of last week's issue.)*

THERE is in all new buildings a certain speed of erection which forms the most lucrative rate to the contractor. If on the one hand he gets too slow, the cost of erection is enhanced; and the same remark applies if he is excessive in speed.

Consequently, if an architect (and the proprietor through him) asks for tenders for the execution of certain works with the intention of placing the contract with the firm submitting the lowest prices, he can, in equity, only expect that rate of speed at which the contractor makes most profit, for that is all he tendered to do and is all the proprietor is paying for.

The great majority of contracts are let in this country on this understanding; for the date of completion which is named on the contract is calculated on this footing. Neither an American nor any other contractor tendering on this basis would spend his money on accelerated speed if he reaped no benefit thereby. This part of the matter resolves itself into a small compass. If a proprietor wishes a very quickly erected building he must pay the necessitated additional outlay enabling the contractor to effect it at a reasonable profit.

### The Benefit of Bonuses.

Herein is the germ of the whole matter, and herein comes the American's greater keenness at once. We do not, or have not, fully risen to the fact in the great bulk of our contracts that if a proprietor saves £1,000 in interest on his land value by quickened construction, it is a very good business to spend £750 in order to obtain it. It is of course no new thing to us, but we have not as fully realized it as we should. An American proprietor not only does appreciate this but he acts on it, and will spend more than the thousand pounds actually saved in interest because he makes money by having his works and premises as a going profit-making concern all the sooner. There are many in this country who see all this and act on it, but it is not general. Given the same rate of payment and the same conditions, an English contractor will work as quickly, as well, as thoroughly and as satisfactorily as an American, and better in some manners and ways which we in this island prefer. I will presently give you an instance of this.

In making a contract my sons and myself give a penalty for non-completion, with an exactly similar bonus for earlier termination. We find the result just as anticipated, and we often have to certify for a substantial bonus.

It gives us much pleasure when this occurs, for it is an extra payment due for diligent service, good business organization and a gain to both proprietor and contractor. If, however, a very speedy work is desired, bonuses are given to the sub-contractors for the acceleration.

### An Example.

If some imaginary buildings were worth £100,000 to erect in eighteen months, and the builder were offered £10,000 or £15,000 if completed in fifteen months, there would be a strong inducement to pay extra wages for a choice of good workmen and plenty of them, to find bonuses of 1s. 6d. per thousand for bricks for earlier delivery, to provide many a half-crown or five shillings to men to complete a certain thing by a given time, to pay £2,000 for early delivery of steel or stone, to put down the speediest machine, to berth additional superintendents to hustle things up. An American would take greater risks in addition, for they do not put scaffolding like you do in London.

### Bricklaying.

Having thus dealt with the factors making for the American methods, let us now consider whether in England we have been doing anything very similar. I can only speak of building in the North, where we are accustomed to work harder, one hears, than in—shall I say?—the West End. And in entering upon this phase of our subject I can only speak with authority upon those buildings coming under the jurisdiction of my own firm.

There has been much talk about the number of bricks that can be laid per day. At the Westinghouse Works, Manchester, where I was associated architect with Mr. Rodd, one of the first engineers of America, it has been said that on a part of the work 1,600 bricks were laid per man per day. It is quite correct; and we have had this number laid in a two-brick wall at a very different kind of building to a big works—Parr's Bank, Manchester, to wit, with ordinary bond set by trowel in mortar made with Lockwood's Warmsworth Cliff lime. This was without paying extra wages, either. But 1,600 bricks was not the average, and I know of no building where such has been the average. However, you may learn something from

### The Westinghouse Works,

although the conditions were not those of an ordinary building let under one contract to one builder. No contractor was ever asked to undertake the whole contract. All heavy work was let per ton, per cube foot, per square yard. The excavating was let to one firm, the steel to another, the slating to another, and so on—all English firms. On one side of the site were brick kilns, and whilst the excavations were in progress about 4,000,000 bricks were made and stored, the site was levelled, about eight miles of railway track were laid down connecting all parts of the work together and proceeding from a main track from the ship canal docks and the principal railway systems; timber was stored adjoining the rails, the large machine shop foundations were in, the steel work well commenced—in fact, there was a quarter of a million pounds' worth of work done or material delivered on the site before an American contractor came to employ bricklayers, carpenters, &c. He did not come as a contractor with a contract price for doing certain work, but was an official of the company. Therefore there is no comparison of this work with that of a general contract. But he got the work pushed on rapidly, and by saving time saved the company interest on their money; and being empowered by an enlightened board to employ as many men as could be utilized, he accomplished the speedy work. And please note that the architects had every drawing ready. There was no delay of five minutes for instructions. There was nothing to wait for, and extra wages were given to men, enabling the best to be picked out and retained on the job.

### How to get Speedy Bricklaying.

If you want brickwork executed at a great rate, have heaps of material ready and put on every man you can. Pick out and keep the best men—discharge the others; and to entice the best men to your work, and to spin out all they know, make it worth their while to stop by paying 10 per cent. more wages; give bonuses for work executed against time, and have plenty of superintendents and foremen. It may not be the best finished, for perhaps this is not necessary, but we are talking of speed and how to obtain it.

A great feature in the speed of bricklaying is the kind of foreman employed. If he be a man of ability, understanding his work, and with sufficient will power to have the work carried out as it should be, and retaining only the competent workers, the work progresses satisfactorily.

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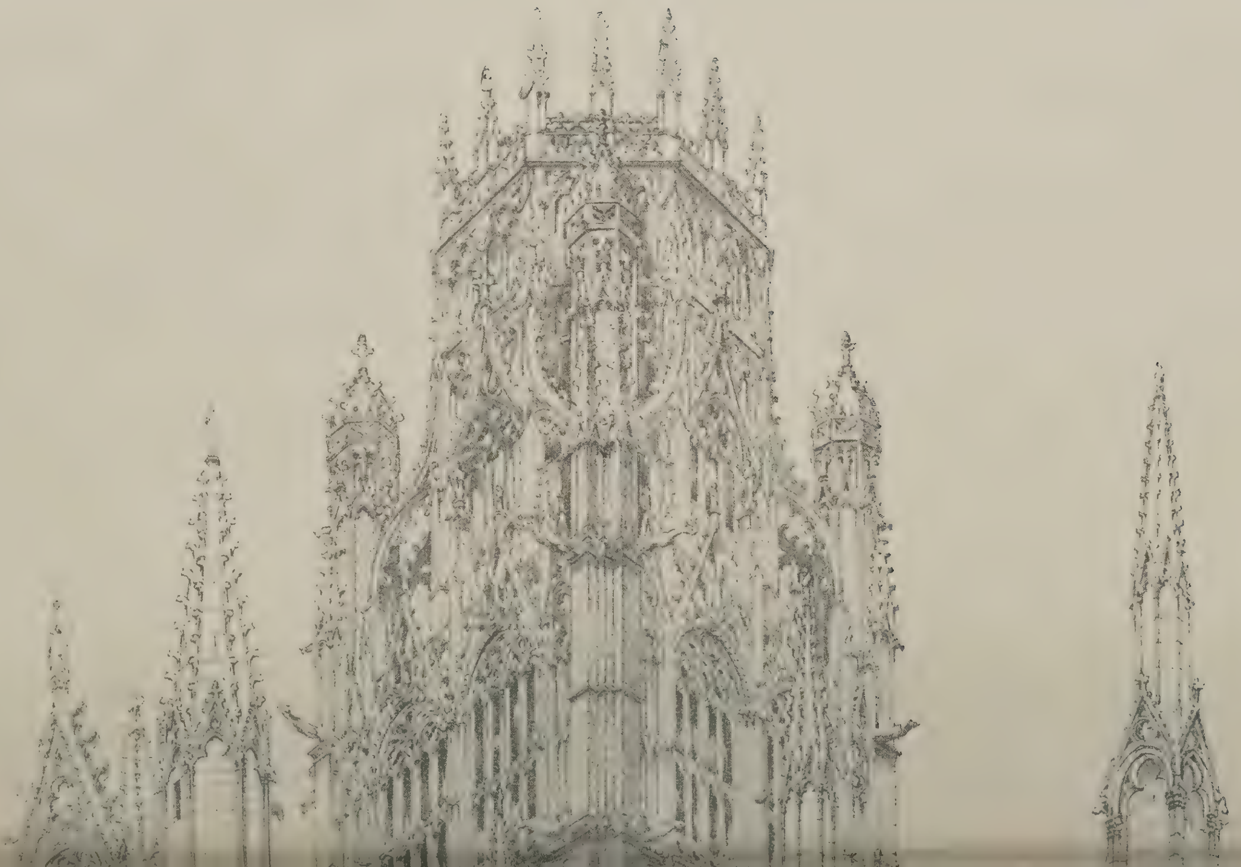

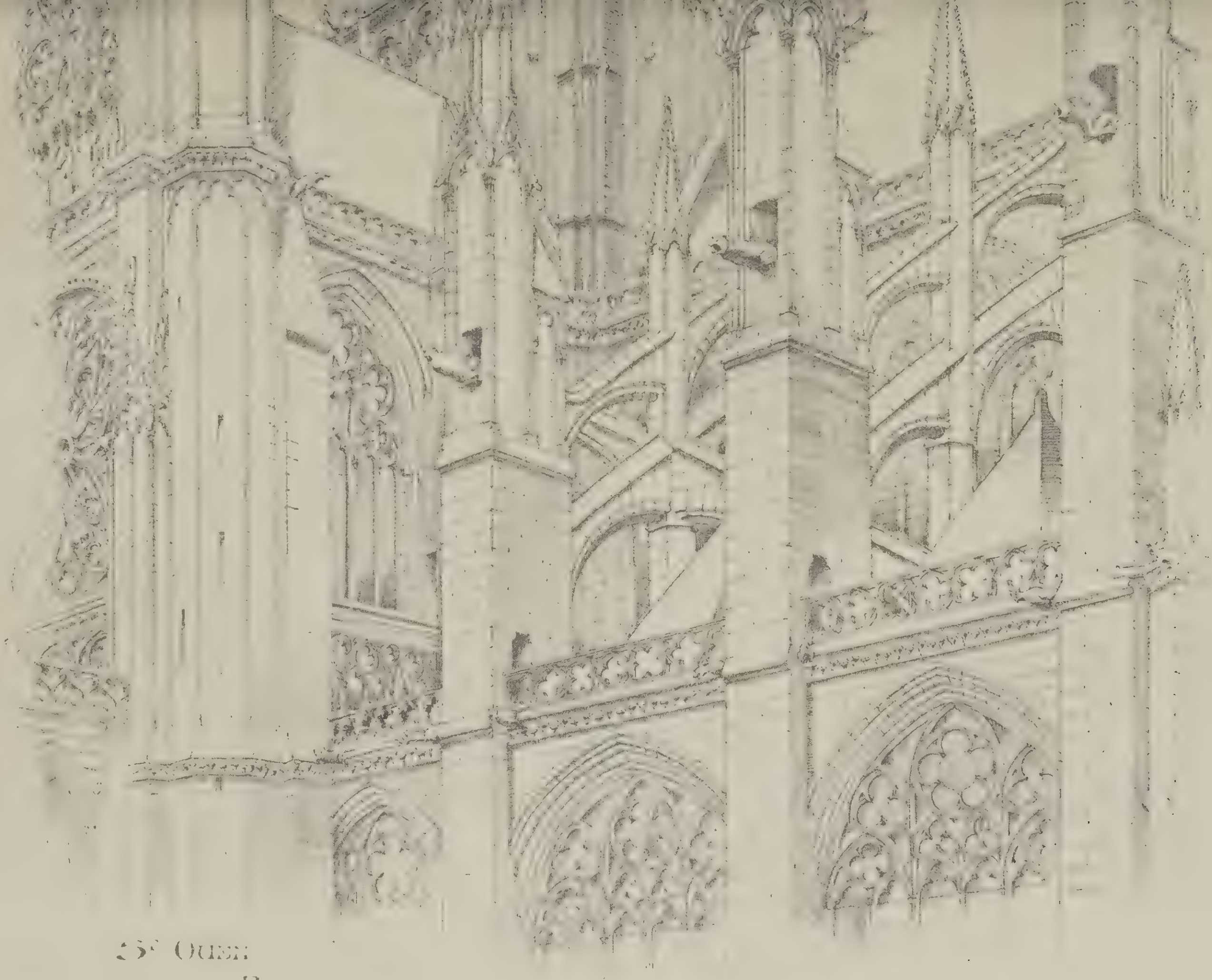

St Ouen
Rouen.

Drawings of Architecture: H. Raine.

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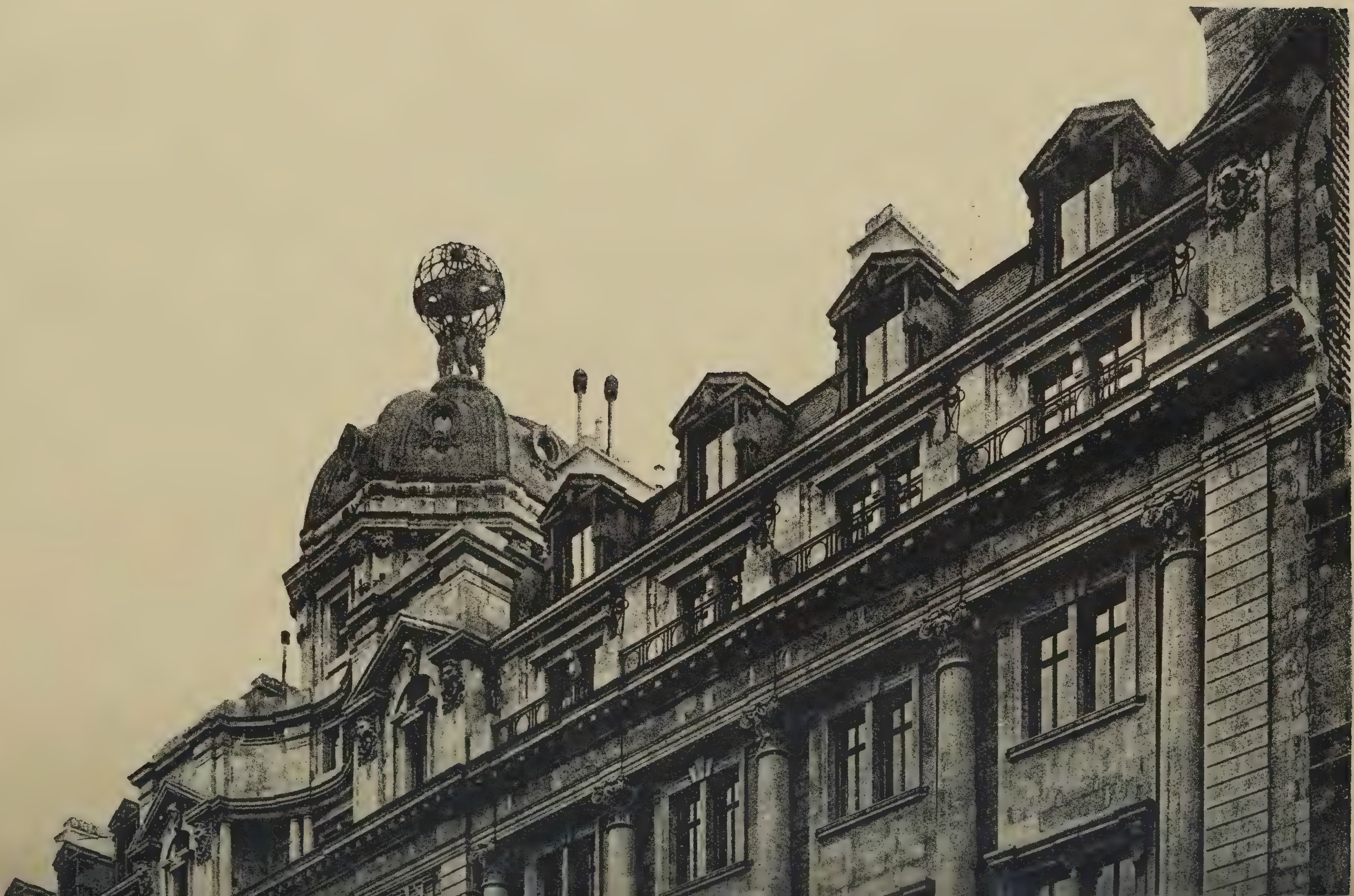

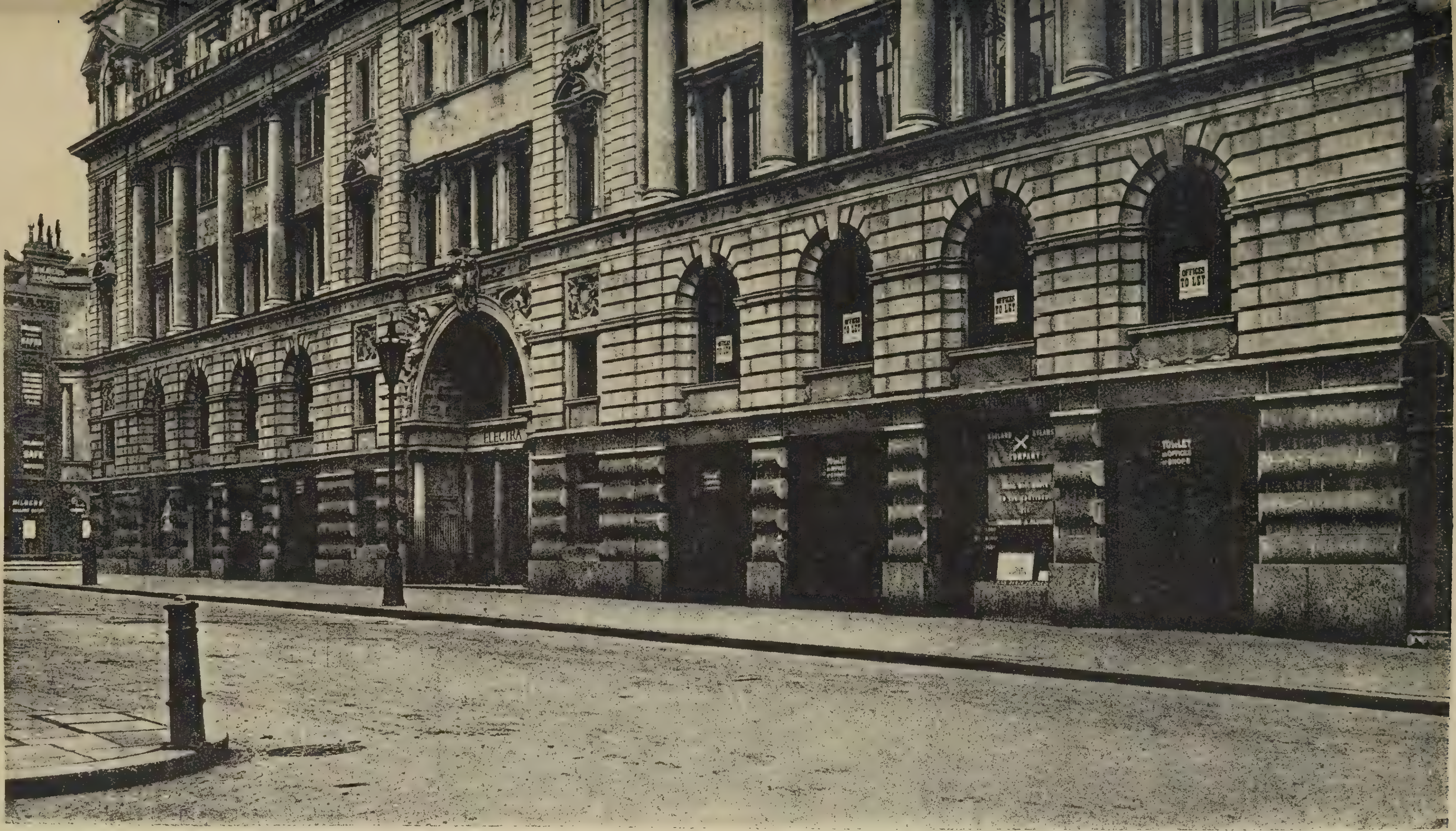

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ELECTRA HOUSE, FINSBURY PAVEMENT, LONDON. JOHN BELCHER, A.R.A., ARCHITECT.

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There can be no criterion of how many bricks should be laid in, say, backing up stonework, erecting buildings partly stone and partly brick; but in an ordinary building, faced with stocks, with stone dressings, general internal walls with the usual doorways, arches, fireplaces, flues, beam filling and such like, if a bricklayer averages throughout 700 English bricks of common brickwork per day of ten hours, he is doing a fair day's work for 8s. 4d.

### American Wages.

An American friend of mine, Prof. John Gray, of the North-Western University, Illinois, to whom I have been of service in giving data regarding British labour for his returns to the American Government, wrote to me in the Spring of this year about bricklayers' wages in America. The "Chicago Tribune" of February 14th, 1903, contained reference to this subject. It said: "Some 4,000 members of the Bricklayers' and Stonemasons' Union have been granted a wage increase. The bricklayers have been getting 4 dols. 40 cents a days for eight hours' work, and they asked for 4 dols. 80 cents. This was given them as a set scale, and to be in force for three years. The men also demanded a half-holiday on Saturdays for six months in the year, and it was granted." This increase without a strike was equivalent to a rise of 10s. per week. Professor Gray added the following very expressive remark: "It seems to me that, notwithstanding the numerous strikes in this country, our employers are more likely to grant demands, especially for increase of wages, than the English employer is, and to try to speed up to the new scale. I believe it costs less per 1,000 to get bricks laid now in Chicago than when the men were paid 2 dols. 40 cents for ten hours' work, instead of the before-mentioned 4 dols. 80 cents for eight hours' work." This price is half-a-crown an hour! It would be an incentive to labour-saving machinery, one would think.

### Some English Figures.

In connection with this matter I have been at some trouble to obtain data of English bricklaying under English superintendence. I will cite a few, all of which have been vouched for to me.

Great Northern Railway Extension, Manchester — foundations 3ft. thick, hydraulic lime-mortar, English bond; average 1,760 bricks per man in nine hours. The same building—stanchion foundations, blue bricks in cement; 1,056 bricks per man in nine hours.

The same building—3ft. wall—both faces finished with blue picked bricks in cement; 704 bricks per man in nine hours.

The same building, wall 18in. thick, common brick in hydraulic lime-mortar, English bond, wall faced one side in picked bricks: 840 bricks per man in nine hours.

On a job in Bolton, 18in. wall faced with selected bricks pointed up: 882 bricks per man in nine hours.

At the same job, in an abutment 8ft. thick, faced one side with white-glazed bricks in putty-mortar; 909 bricks per man in nine hours.

All these bricks were laid by men on ordinary wages of 10d. per hour, under trade-union rules, and without bonuses, &c.

Let me give you another fair instance of this class of work. We (my sons and myself) have recently erected a refrigerating store near the market, Manchester. It has basement and sub-basement and nine other floors. It is faced on two sides with stock bricks, panelled with arches, and has terra-cotta mouldings, bands, cornices, &c. Taking basement walls, face-work, setting round terra-cotta, windows, openings, lift recesses, &c., the brickwork from first to last averaged 750 bricks per man per day of ten hours on ordinary wages.

### The Quickest Piece of Building ever done in Manchester.

The most speedy erection of an ordinarily finished building ever managed in Manchester was that of Peak's Warehouse, Portland Street. It was done by Robert Neill & Sons, builders, under us as architects. It will be of interest to you to know the methods adopted, especially as it was entirely initiated, organized, supervised and executed locally. We should not have thought much of it, or as anything needing comment, except for the notices taken with respect to foreign work of a like nature.

The building is a seven-storeyed warehouse for the home trade. There are three hoists, the usual counting-house, private office, kitchen, fittings, &c.; every wall and ceiling plastered, and the building generally well fitted with counters, electric light, &c. It stands on 1,000 sq. yds. of land, and faces into three streets.

The old building was gutted by fire on July 24th, 1902. One side wall had to be taken down, one façade had the stonework of a floor to be replaced, and the back had to be half rebuilt. In rebuilding it was decided to adopt more modern planning, which necessitated different lines of columns, increased height, and new work even to the column foundations. The clearance of the *débris*, and the insurance matters, took until September 7th. On that date the contract was signed. At the time of signature complete drawings and details were handed to the contractors. We arranged that the steelwork should be erected by the steel engineering contractor, so that this part should not be dependent upon any one. We had arranged with a mill to commence rolling for us within twenty-four hours of receiving our instructions, and also with a foundry to work in three shifts of eight hours each to get the cast work out. The whole work was under the immediate supervision and organization of Mr. Harold Heathcote, one of my partners, with a clerk of works to keep the progress notes, &c. The result of organizing and looking ahead, spending £500 for additional cost in pushed labour, and having a first-rate building firm to deal with, resulted in the whole warehouse being completed and business resumed on January 24th, 1903, or twenty weeks from signing the contract. The cost was about £23,000. From the date of the contract to the time the whole of the iron columns, beams and floor joists for seven floors, inclusive of ordering, making and erecting, was only seven weeks, showing what can be done if one sets to work the right way.

I have referred to the thought which Americans have put into some lines of business to undercut our manufactures. Let me give one example in connection with our building trade.

### Radiators and Boilers.

Perhaps in America the extremes of weather make it more a necessity to very carefully consider the question of heating buildings than with us. But it is of sufficient importance to our comfort and general health that our system and our appliances be as perfect as we can devise. Yet we did not as carefully study the subject as we might have done, until American competition forced our manufacturers to do so effectually. It is an industry closely connected with buildings, so may be taken as an instance of how we did not master the subject as we might have done, and how we should probably have continued in complacent satisfaction had not American competition forced our heating apparatus makers to do so for their own protection, and with the usual result, for some of our manufacturers are to-day producing cast sectional boilers and radiators equal to either American or French in price, finish and efficiency, although not yet in as many varieties or of the largest capacity. If they will do this, they will at least again command the market of their own country, and they may be trusted to then push forward the export of their wares. To obtain the best article the American manufacturers concentrated their fullest thought, energy and scientific knowledge upon the character of the metals best adapted to meet the various requirements of softness, non-porosity, smooth clean finish, and uniformity of thickness in casting. This was specially directed upon what are known as sectional boilers, where enormous heating-surface is required, where the pressure is high. With them, method and standardizing are enforced in fitting and erecting, and in having the template of each member numbered and indexed before leaving the works; so that, in the event of any of the component parts requiring renewing, they can easily be duplicated. Large quantities of radiators have been shipped to Europe within recent years. One firm, at all events, was quite prepared to have their work done in France, because it was found that the French workmen bestowed greater care and interest on the moulding and casting of radiators, producing a most reliable and beautifully finished article. These improvements, as I have said, were so materially affecting the English trade that the necessary incentive was created—the incentive of self-interest—and we are again holding our own. We shall do more than this if our manufacturers will give up their conservatism altogether, and increase the varieties and also the capacity of the heating boilers, and not need more foreign competition to jog them up again. We were slow to adopt the telephone, the electric tram-car, the electric light and the motor car. We sometimes expect to compete successfully with those countries which adapt themselves to the quickly-changing conditions of life. It is our conservatism that is injuring us, and it might be added it is competition that is stirring us up. The young Englishman in this or any other business needs to devote more time to studying the technical details and learning the methods of other countries, and from that knowledge striving for high standard of workmanship and enterprise in combination with originality. May I suggest that the Institute of Builders use their influence towards getting all apprentices to pass through building construction classes in the technical schools?

### A Suggestion in regard to Very Large Buildings.

In very large buildings where there is much architectural treatment involved, the architect is generally very fully employed in quietly, earnestly considering and working out the details of his design, and will perform that duty more whole-mindedly if not constantly diverted by personal superintendence as well. It may be worth consideration whether in, say, great Government contracts it might not be advantageous for the designing architect to be associated with an architect who would have the entire charge of superintendence. And for each of these architectural positions the best man for English buildings is a trained, energetic, high-minded English gentleman. There are many men answering this description and as capable as can be found in any land.

### Labour.

The question of labour is most difficult to answer. Quoting from a work by Mr. J. F. Fraser: "The raw material from which America produces its workers is the finest procurable in the world. America is not the dumping ground of the world's refuse. The immigrants into America are hardy Europeans discontented with the conditions in the old countries, but who have saved enough to set out and try their abilities in the new. Daring, pluck and enterprise are necessary to break with family ties, and the men who have shown sufficient courage to do this are the very men likely to prosper wherever they settle." And this emigration is a great matter with us. In America if a man does not work up to all that is in him he is discharged, for there are plenty coming by the next boat ready to take his place. With us the numbers of our best men are not thus increased, and the trade unions sometimes discourage the good man to do his best, but encourage him to slow down to the level of the inferior man.

It is often the best men who emigrate, and their places are to some extent filled with an unrestrained pauper refuse from any country wishing to get rid of them. Is this reciprocity? Do we legislate, as I have said, in this as in our Patent laws for our own country's benefit, and for the advantage of our own people? We are not as alive to our own interests as we ought in common-sense to be. This immigration and emigration are serious items in the labour difficulty. They can only be restrained by our working men knowing they will have as much reward here as elsewhere in return for their *best* endeavours. Do you offer any rewards to your workmen for improvement of knowledge, for suggesting improvements, for specialized ability, thus giving them increased interest in their business?

### The Average Workman.

The American gets a real honest joy out of his working. He likes it. His interest is in it. He is optimistic. He knows there are openings for his progress. He has a magnificent belief in his own abilities, and loves to read those papers which prove what a fine fellow he is and how he overcomes the sleepy European. Enthusiasm is in the air. There is no do-nothing class supposed to be on a higher plane than business men. He sees the wealthy around him working as hard as he does. His English fellow is taught by his union that if an American lathe-turner work four lathes it is no reason why he should be allowed to work more than two, caring not whether the trade thus leaves his employer or not. There is a greater readiness generally in the States to listen to the suggestions of the workpeople, and many of the labour-saving machines are the outcome of this better understanding; and if you look into it you will find English brains well to the fore in inventions. The greater interest of the workman in his work, his endeavour to rise in the world, the better-schemed education he has received, and the readiness of the employer to listen to the suggestions of improvements, are all factors stronger in the States than in England. The sentiment in England that a man who belongs to an idle leisured class is for that reason to be envied, forms a great drawback to progress and efficiency. This example to those less blessed with the world's goods does not tend to enthusiasm for diligent work. To see the wealthiest working hard in the business gives a solidarity of interests, a feeling of contentment, to all engaged therein.

An American's ambition for wealth and the power wealth gives is greater than ours. He will work longer hours, and when there is no need for it, in order to add wealth to wealth. Whether, in the one life we have, this is a true and worthy ambition is another story, not falling within the lines of this paper fortunately. The American employer considers the health and comfort of his people as conducive to his own interests, and endeavours to meet this end by considering their welfare in the dining-rooms and conveniences of the workshop. In many works each man has a locker for his clothes, and ample arrangements for keeping himself respectable in cleanliness and appearance. It must be admitted there has been no lack of our Government interference on behalf of the English workman. Innumerable Factory Acts, Special Rules, Compensation Bills, Board of Trade Regulations are in force here that have no existence elsewhere.

### New Business Methods.

I believe we shall adopt many American business methods here, altering many of our conditions, and bringing about a more mutual appreciation of the difficulties between employer and employed. This is very necessary to modify the actions of trade unions in those directions for curtailing the output of material, and hampering a free working man in doing the utmost he can with his labour, which is his capital. It is the old story in England. The first brickmaking machines were invented in England, but the men working them were murdered. The first building in Manchester where men dared carry bricks without the ordinary hod was the Town Hall, less than thirty years ago. Even then the contractors had to obtain the protection of the police. The whole fallacy of the unions' policy of allowing and encouraging a man to do less than a fair day's work, in order that some other man may get a job, depends, it would seem, upon the false assumption that the amount of work to be done is a constant quantity. There is no limit to the work to be done if we can do it quickly and economically, for there is no limit to human wants.

### Machines.

Mr. Merttens says: "Whilst unregulated and inorganized labour must be deprecated, the labour organizations must not block economic progress; the newest machines replacing costly labour must be adopted and be worked as cheaply and efficiently as possible, and the output increased wherever desired. To restrict the better educated and more skilled workmen from doing the best and the most they can is an economic fallacy which if persisted in will utterly ruin the trade of England. With the adoption of machinery, wages have risen all over England; with the adoption of more modern labour-saving machinery, American wages have risen still more. But the fault does not lie with the workers alone. Employers in England have yet to learn the economy and efficiency of high wages, and to acquire some of the intensity of application of their American competitors. The more they go and study their methods of combination and organization, especially in economizing labour, the better. There are, of course, many trades which are not as efficient in America as in England."

To a lecture by Sir William Bailey I am indebted for the following: "Civilization is the economy of force, whether it be intellectual, moral or spiritual, and if we can only persuade working men that the rewards are in proportion to the production, and that to get more work to do we must have the ability to produce more work in less time, because of the demand for cheap commodities, then something will have been achieved."

It would be very advisable for contractors to spend some time in the States closely and earnestly studying the methods of labour, combination, &c., mentioned. Americans are very hospitable.

There is no hampering an American workman in his business. If he can set bricks he is taken on as a bricklayer, and the other workmen do not strike the job because he has not been a bound apprentice for four years. Here it is once a labourer always a labourer, but there you are a bricklayer if you can lay bricks.

There is also a spice of adventure about the American working man. He will cease to be a watchmaker and take to farming, give up newspaper reporting to start a constructive engineering company, a patent roofing or a patent flooring company; a builder's pay clerk will start in conjunction with a student for "electrical equipment in all its departments and permanent way constructors." It is risky to himself and all who employ him, and shows nothing from which we can derive the slightest benefit.

The drink statistics show that the expenditure per unit here is just twice as much as in America. If our workmen would spend only one-half what they do in this line their wages would increase by their working on St. Monday, now an off-day, and their savings would result in scores of millions going into reproductive trade. We should not hear much then about the alteration of fiscal policies, for we should be fully employed in one great boom of trade.

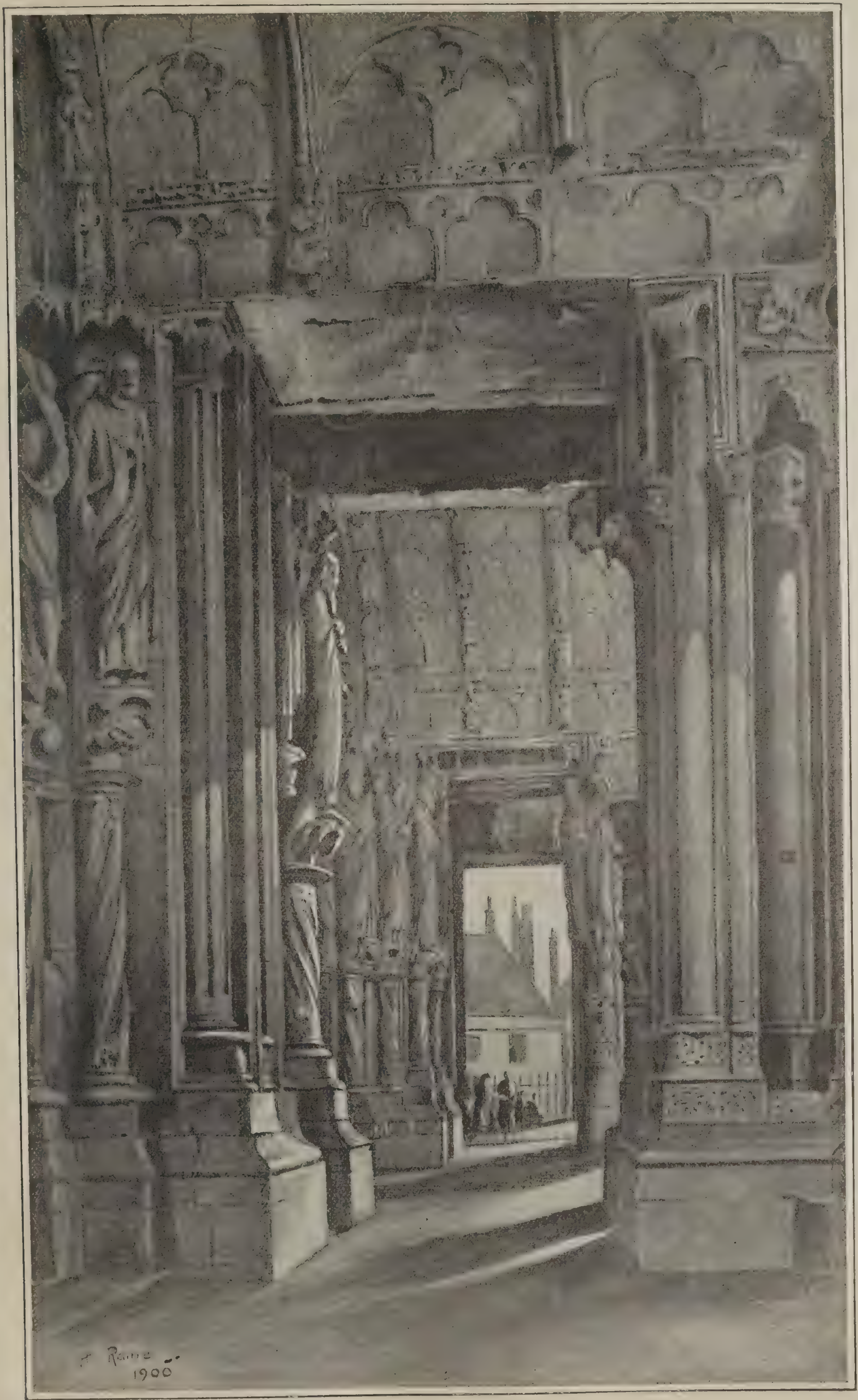
One way to lessen the difficulty with labour is to pay the best man the best wage you can afford him so long as he gives you his best; make him realize that his best friend is his employer, and that it is his personal advantage to forward his employer's interests. In that manner you will retain the men you really need and give the natural incentive to the workmen's progress and advancement. Have you ever tried employment by piecework in building?

It is desirable to guard myself from the supposition that I think the struggle to accumulate money should be engrossing, and that it should be a main object of life. I am aware of the danger of allowing the consideration of industrial problems to obscure those of a social character. The productive activity of the people depends on their physical, moral and intellectual qualities, and unless we improve these the industrial problem will hardly be solved. But I do maintain that whilst in business you should do it to the best of your ability, and if you can learn from your competitors any element of success and method it is a part of your duty to obtain it and act upon it with wisdom and with energy. And, further, business men should develop the power of initiation, and improve even upon those desirable elements that are to be gathered from others. We have not yet attained to the full perfection in anything, and the future is in the hands of the man with brains to think, self-reliance to carry out, and energy to complete. Many there are amongst us doing this now, making earnest persevering efforts, but the wish to do it is far from universal; far from being the ambition that it should be, and indeed must be, if we are to retain all along the line our position in the business world. And you may depend upon it there is great life and there are great possibilities for us all in our England. How can we otherwise account for the great love so many foreigners have for our land, and their sensitive desire to share our good fortune and our trade?

It is not necessary either to carry business to such excess as to make men into sleek and prosperous human animals and to lose the noblest qualities and prerogatives of life and manhood. All I suggest is the greater quickening inspiration in our methods, our intensity, our business life. The challenge is uttered in strong, clear, masterful tones to-day. Let us but answer it more fully than we are doing by the old British love of work and enterprise. This is the regenerating grace needed in our business world, and is the prophecy of prosperity.

## DRAWINGS OF ARCHITECTURE.

OUR series is continued this week with Mr. Raine. There is nothing in way of comment which needs to be said about the beautiful pencil drawing reproduced in the centre plates; in regard to the drawing published on p. 267, it may be of interest to state that the original is very subdued in tone; it is carefully executed but has none of that "photographic" quality so often found in drawings of the kind. Both drawings are well worthy of careful study. Others by Mr. Raine have been published in back numbers.



DRAWINGS OF ARCHITECTURE: NORTH PORCH OF CHARTRES CATHEDRAL, BY H. RAINE.

# Enquiries Answered.

*The services of a large staff of experts are at the disposal of readers who require information on architectural, constructional or legal matters. Questions should in all cases be addressed to the Editor. The querist's name and address must always be given, not necessarily for publication.*

### "The Consulting Architect."

ABERDARE.—D. M. D. writes: "What is your opinion of a book entitled 'The Consulting Architect' by Robert Kerr; where can it be obtained?"

This book deals with the legal aspect and etiquette of the profession, and will undoubtedly be of use to any architect. It is somewhat out of date now, however, with regard to the state of the law on many points. It is published by Mr. John Murray, Albemarle Street, W.

### The Architectural Museum and Parkes Museum.

LONDON.—F. G. L. writes: "Is the Royal Architectural Museum in Tufton Street open to non-professional persons—say, to building construction students? Also the Parkes Museum, 74, Margaret Street, W. I want to take a friend from the country during the Christmas holidays."

The Architectural Museum is now closed while the premises are being reconstructed for the purposes of the Architectural Association, and will not be open till next Spring. The Parkes Museum is open from 10 to 6, and on Mondays till 8. It is free to the public except when lectures or meetings are being held.

### Extras.

GLASGOW.—X. X. write: "We are at present erecting a building for which we gave a slump sum offer, but to be built to an engineer's plan and a specification made out by us, which included three buttresses 24in. by 9in. and 28ft. high. (1) The corner buttress is equal in size to two single ones. Are we entitled to be paid for one extra? (2) When excavating the foundations we had to go 3ft. lower than anticipated. Are we entitled to extra payment? (3) A skylight in the roof, not shown on the plan nor included in the specification, was also wanted. Are we entitled to payment for this, and for any other extras they may want not included as above?"

(1) We think not, as this might have been inferred from the plans or the specification, or the very nature of the problem. (2) Yes. (3) Yes.

### Party-Walls.

LIVERPOOL.—ARCHITECT writes: "In rebuilding there is a 9in. fence wall upon one side of the property, and as it has buttresses on my client's land (and for other reasons) he thinks it belongs to him, although the adjoining owner claims it as a party-wall. I have advised my client to allow this claim, but the adjoining owner, who objects to the building altogether, threatens legal proceedings if we touch the wall. The London Building Act, 1894, makes all these things quite clear. I suppose if I generally follow the lines of that Act and give the adjoining owner due notice, we are fully entitled to pull down and rebuild the fence wall as a party-wall (projecting footings included), or, if I choose to set back 4½in., I can build an external wall belonging exclusively to my client, although I should like to know in this latter case if I am entitled to project my footings on the adjoining owner's land, as allowed by the London Act."

*Primâ facie*, in the circumstances you mention, the boundary wall belongs to your client, but of course documentary or other evidence may possibly be forthcoming to rebut this presumption. I therefore think you have acted wisely—though cautiously—in advising your client to treat the boundary as being a party-wall. Your neighbour is evidently inclined to act unreasonably, and will prejudice any court against himself by unwarrantable or unneighbourly proceedings. I think, therefore, if you give him reasonable notice of your intention to build as you suggest you will be perfectly safe, as his legal remedy, if injured, should presumably be by injunction and not by action for damages afterwards; and it appears to me that if you give him the opportunity of applying for an injunction to prevent you from building he will be vitiating any after-action should he elect not to do so. In this connection I refer to the act of building only, not to any possible loss of light or air occasioned by your new edifice. In the second case you suggest—where you build entirely on your own land—I doubt if you would be justified in projecting your footings on the adjoining owner's property, and should certainly not advise doing so. F. S. I.

# Keystones.

**The Architectural Association of Ireland** recently visited the engineering works of Mr. William Spence at 107 and 108, Cork Street, Dublin.

**Frimley Council Offices.**—At a recent meeting of the Council it was reported that four or five competitive designs for the Council offices had been received.

**Mr. Barrett**, of Messrs. Barrett & Driver, architects and surveyors, 23, York Place, Baker Street, W., was married on Monday last.

**Durban Town Hall Competition.**—It is announced that the Town Council has accepted plans for the new town hall, to cost £300,000, but the names of the successful competitors are not yet given.

**Ulster Society of Architects.**—At the annual meeting held last week, Mr. W. J. Gilliland was elected president and Mr. J. J. M'Donnell vice-president for the ensuing year. The report of the council stated that the society was making satisfactory progress.

**Proposed Baths at George's Dock, Liverpool: Project again Shelved.**—At last week's meeting of the Liverpool City Council the Baths Committee recommended the erection of new baths on the George's Dock site, at an outlay of £75,000. This was rejected by 65 votes to 32.

**New Premises for Parr's Banking Company, Limited,** have been erected at the corner of Spring Gardens and York Street, Manchester, from designs by Messrs. Charles Heathcote & Sons, Cross Street, Manchester. In the basement are the large strong-rooms, placed in the centre and surrounded by 10ft. passages for security, these passages being supplied with rows of steel racks for storage purposes, whilst the strong-rooms themselves are armoured with triple steel plates on walls, floor and ceiling.

**Municipal and County Club.**—Sir Samuel Provis, K.C.B., Secretary of the Local Government Board, was the guest of the evening at the recent house-dinner of the Municipal and County Club, Whitehall Court, Mr. Laurence Gomme, F.S.A., clerk to the London County Council, presiding. Sir Samuel said he considered the club distinctly filled a void, and was the beginning of a great institution. (It was formed at the beginning of the present year. The club-house has been newly furnished and decorated and a grill-room added, and the bedrooms for country members are a special feature. The Executive Committee enrolled forty-three new members at last week's election.)

**Aberdare Hall, Cardiff,** is proposed to be completed at a cost of about £3,000.

**Salford Town Hall** is proposed to be extended by the addition of a wing, in West Market Street, estimated to cost £14,000.

**The Theatre Royal, Birmingham,** is to be rebuilt from designs by Mr. Ernest Runtz. The main entrance will face New Street. The proscenium opening is to be 34ft., and the stage itself 73ft. wide, with a total depth of 48ft.

**Rosebery Avenue.**—The London County Council propose to extend Rosebery Avenue to City Road, at an estimated cost of £48,200, as a substitute for the widening of High Street. The Islington Borough Council do not consider this a satisfactory substitute.

**A Stained-Glass Window,** executed by Messrs. Abbot & Co., Lancaster and London, was recently erected in the east end of the British Embassy Chapel, Constantinople. It is the gift of the Ambassador, Sir Nicholas O'Connor, and staff, and is a memorial of Queen Victoria.

**Excavations in Egypt.**—The Department of Egyptian Archæology of the University of Liverpool has completed preliminary arrangements for a season's excavations in Egypt. These will be chiefly on the necropolis of Beni Hasan, where Mr. John Garstang, the reader, conducted excavations last winter. A special feature of the season's work will be the excavation of the great tomb at Negaden, which has been supposed by a French explorer to be that of Menes.

**Wells Cathedral.** — No more beautiful thing has been presented to the cathedral since the great east window of the choir was given not long after the battle of Cressy, about 550 years ago, said the Dean of Wells recently in accepting from the Earl of Cork and Orrery two stained-glass windows, which have been placed in the north transept to the memory of the men of Somerset who fell in the South African war. The windows are by Messrs. Powell, of Whitefriars, London, and cost £400.

**Edinburgh's New Gas Works.**—At the last meeting of the Edinburgh and Leith Gas Commissioners Mr. Horring, the engineer, presented a report proposing to proceed with another section of the new gasworks at Granton. He estimated that the cost, with plant, would be £200,000, and it would be the winter of 1907–8 before the work was completed. The city works could then be given up The report was approved.

**New Hotels in Piccadilly.**—On the site of St. James's Hall and Restaurant a new hotel, to be known as the Majestic, is to be built. The new Hotel Ritz which will replace the Walsingham House Hotel next the Green Park will be built on the American steel-frame plan as far as the Building Acts will allow. The American contractors declare that within fifteen weeks of the laying of the foundations and the construction of the steel framework the building work will be practically completed.

**Fresh Air.**—Mr. Robert Boyle, the well-known ventilating engineer, writes: "As fresh air, particularly in its connection with the prevention and cure of consumption, is at present occupying considerable attention, perhaps the following paragraph may be of some interest to your readers. The Vienna 'Vaterland' publishes an interview with the Pope, who said: 'They say I am turned into a Grand Seigneur, because by my order two apartments were prepared for me. Now it is true that Leo XIII. was content to live, for twenty-five years, in one small room, in which he slept, dined and worked, but I cannot understand how he was able to do it. I need an airy, roomy apartment. But above all I must have air.'"

# Electrical Notes.

### The Benefits of Electric Tramways.

Is it not time to make a protest against the action of our municipal authorities in certain "residential" districts, without specifying any one in particular, for resisting the introduction of electric tramways? Every day the problem of adequate methods of transit becomes greater in London, every day the tendency is for people to move further out into the suburbs; and yet, with the exception of the so-called "tubes," and the few miles of main road tramways, there are no proper means of transit. Let this state of things be compared with that obtaining in any moderate-sized town on the Continent or in many of our own provincial towns. It is the question of intersection which is the true solution of quick transit; Manchester and Liverpool, for instance, have complete networks of tramways, which make it possible for the passenger to be deposited within, at the most, a few hundred yards of any desired point. The few lines which the Londoner is allowed are confined to certain main roads, which become congested with the cars, whereas if the latter had many routes to follow, traffic generally would be better distributed. Take any suburban district, such as Hampstead, where the distances run into miles. Because of the narrow-mindedness of councillors, whose public spirit is ostensibly regulated by æsthetics but actually by fear of loss of votes; and of the selfishness of a few wealthy residents who can afford cabs; it is becoming increasingly difficult to get from one neighbourhood to another. Such a district should be one network of trams, which in turn would meet, or have running powers over, those of the next borough, and so on.

Those trams which have been authorized have been more or less confined to the main roads, as explained, with the result that very large and powerful cars have been made, which are actually an economy, as they take a large number of passengers and dump these down anywhere within a few miles of their residences. These cars, being heavy, make a considerable noise, and the large amount of other traffic renders it necessary for the gong to be continually sounding—especially as the horse traffic is often purely obstructive. Consequently these cars are somewhat of a nuisance to peace-loving people, who have become imbued with the idea that all tramcars are equally noisy. Were the streets intersected as suggested, such large cars would neither be necessary nor feasible. Smaller vehicles, such as are used in provincial towns, would be sufficient for the traffic, and the comparative absence of other forms of vehicles in the side streets would make the sounding of the gong quite exceptional. As regards æsthetics, this is merely a matter of custom; and why should it stand before utility?

### Electrification of Railways.

Up to the present very little in this direction has been done in this country, or indeed anywhere, but nevertheless that little has enabled makers of the necessary equipment to derive valuable experience as to the best system to use. The existing electric lines, or those in course of construction or transformation, have been equipped on the direct-current system with 500-600 volts—at any rate in England, chiefly because the distances are short. Such, for instance, are the London Underground Railways, the Mersey Railway, and the North-eastern section near Newcastle. It is true that the last is about forty-five miles in extent, but the power is derived from various existing stations and sub-stations along the line. When it comes to longer distances the question of economy becomes a large factor, and the generation of polyphase high-tension currents requires large and expensive plants for conversion to the usual direct-current pressure just referred to. Again, the direct use of polyphase currents for driving has not been found in every respect advantageous.

### Single-Phase Systems.

Consequently manufacturers of such equipments have been looking for improvements, and whilst the single-phase system seemed to hold out advantages not possessed by either of the other systems, a really efficient motor was lacking. During the present year, however, the difficulties in this direction appear to have been overcome, and at least two companies are prepared to equip railways on the single-phase system—these being the Union Elektricitäts Gesellschaft in Germany and the British Westinghouse Co. in this country; the latter, with commendable boldness, offering to convert existing lines already working with direct current—so quickly do we progress nowadays. We hope to have something further to say regarding their system in a future issue. The German company have demonstrated that their motor is suitable for both tramway and railway purposes. In the former case they have a line in their works, supplying a car having two 40-h.p. motors with single-phase current at 600 volts and 40 cycles. Twenty of these cars are being supplied to a Belgian company for a similar system. The railway line comprises about 2½ miles on one of the Prussian State Railways, lent for experimental purposes. The two 125-h.p. motors are supplied from an overhead line with current at 6,000 volts, 25 cycles. It will thus be seen that sub-stations can be entirely dispensed with, and the consequent saving in cost must be very large.

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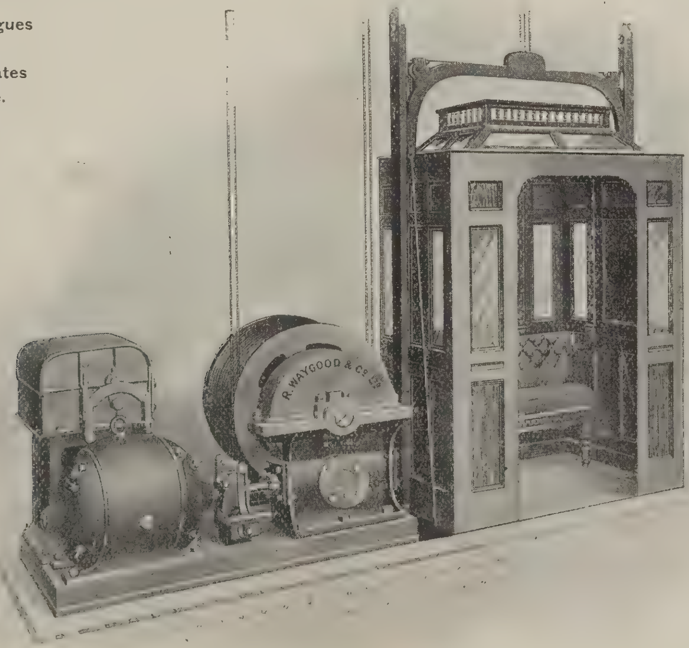

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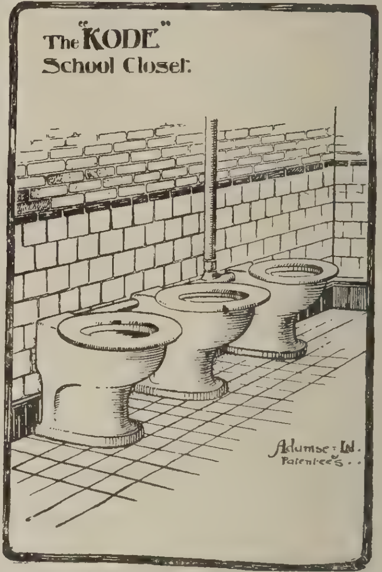

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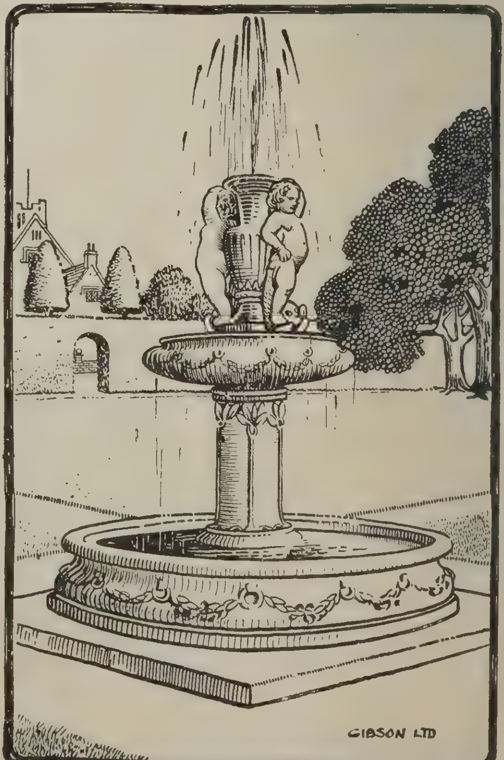

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| Colza Oil, English .. | do. | 1 | 3 | 6 | — | | |
| Copperas .. .. | per ton | 2 | 0 | 0 | — | | |
| Lard Oil .. .. .. | per cwt. | 2 | 15 | 0 | 2 | 17 | 0 |
| Lead, white, ground, carbonate .. .. | do. | 1 | 4 | 10 | — | | |
| Do. red .. .. .. | do. | 1 | 0 | 4½ | | | |
| Linseed Oil, barrels .. | do. | 0 | 18 | 0 | — | | |
| Petroleum, American .. | per gal. | 0 | 0 | 7⅝ | 0 | 0 | 7⅞ |
| Do. Russian .. | do. | 0 | 0 | 5⅞ | 0 | 0 | 7⅛ |
| Pitch .. .. .. | per barrel | 0 | 8 | 0 | — | | |
| Shellac, orange .. .. | per cwt. | 11 | 3 | 0 | — | | |
| Soda, crystals .. .. | per ton | 3 | 2 | 6 | 3 | 5 | 0 |
| Tallow, Town .. .. | per cwt. | 1 | 7 | 6 | — | | |
| Tar, Stockholm .. .. | per barrel | 1 | 1 | 6 | — | | |
| Turpentine .. .. | per cwt. | 1 | 14 | 3 | — | | |

## METALS.

| | | £ | s. | d. | £ | s. | d. |
|---|---|---|---|---|---|---|---|
| Copper, sheet, strong .. | per ton | 71 | 0 | 0 | — | | |
| Iron, Staffs., bar.. .. | do. | 6 | 0 | 0 | 8 | 10 | 0 |
| Do. Galvanised Corrugated sheet .. | do. | 10 | 15 | 0 | 10 | 17 | 6 |
| Lead, pig, Soft Foreign.. | do. | 11 | 2 | 6 | — | | |
| Do. do. English common brands .. | do. | 11 | 7 | 6 | 11 | 10 | 0 |
| Do. sheet English 3lb. per sq. ft and upwards .. | do. | 14 | 0 | 0 | — | | |
| Do. pipe .. .. .. | do. | 15 | 0 | 0 | — | | |
| Nails, cut clasp, 3in. to 6in. | do. | 9 | 5 | 0 | — | | |
| Do. floor brads .. | do. | 9 | 0 | 0 | — | | |
| Steel, Staffs., Girders and Angles .. .. | do. | 5 | 10 | 0 | 6 | 5 | 0 |
| Do. do. Mild bars .. | do. | 6 | 0 | 0 | 6 | 5 | 0 |
| Tin, Foreign .. .. | do. | 123 | 10 | 0 | 124 | 0 | 0 |
| Do. English ingots .. | do. | 126 | 15 | 0 | 128 | 10 | 0 |
| Zinc, sheets, Silesian .. | do. | 23 | 2 | 6 | — | | |
| Do. do. Vielle Montaigne | do. | 23 | 10 | 0 | — | | |
| Do. Spelter .. .. | do. | 20 | 2 | 6 | 20 | 7 | 6 |

## TIMBER.

### Soft Woods.

| | | £ | s. | d. | £ | s. | d. |
|---|---|---|---|---|---|---|---|
| Fir, Dantzic and Memel | per load | 1 | 13 | 0 | 3 | 0 | 0 |
| Pine, Quebec, Yellow .. | do. | 5 | 5 | 0 | 6 | 5 | 0 |
| Do. Pitch .. .. | do. | 2 | 11 | 0 | 2 | 16 | 0 |
| Laths, log, Dantzic .. | per fath. | 4 | 10 | 0 | 5 | 10 | 0 |
| Do. Norrkoping .. | per bundle | 0 | 0 | 7¾ | — | | |
| Deals, St. Petersburg, White, 3rd, 2×5 to 3×11 .. .. | per stand. | 6 | 15 | 0 | — | | |
| Do. Kemi, Yellow, 1st and 2nd, 4×12 | do. | 12 | 0 | 0 | — | | |
| Do. do. do. do. 3×9 | do. | 9 | 10 | 0 | — | | |
| Do. do. do. 2nd, 3×9 | do. | 11 | 0 | 0 | — | | |
| Do. do. do. 3rd, 4×11 | do. | 6 | 5 | 0 | — | | |
| Do. do. do. do. 3×9 | do. | 8 | 0 | 0 | — | | |
| Do. Svoka, Yellow, 3rd, 3×9 | do. | 12 | 0 | 0 | — | | |
| Do. Archangel, Yellow, 2nd, 3×11 | do. | 17 | 10 | 0 | — | | |
| Do. do. do. 3rd, 3×9 | do. | 13 | 5 | 0 | — | | |
| Do. do. do. 4th, 3×9 | do. | 9 | 15 | 0 | — | | |
| Do. do. White, 1st, 3×9 | do. | 11 | 10 | 0 | — | | |
| Do. do. do. 2nd, 3×11 | do. | 10 | 15 | 0 | — | | |
| Do. do. do. 3rd, 3×11 | do. | 8 | 15 | 0 | — | | |
| Do. Uleaborg, Yellow, 1st & 2nd, 4×11 | do. | 11 | 0 | 0 | — | | |
| Do. Lovisa, Yellow, Unsorted, 3×9 | do. | 11 | 15 | 0 | — | | |
| Do. Lewisport, White, 1st, 3×9 | do. | 8 | 10 | 0 | — | | |
| Do. do. do. 2nd, 3×9 to 11 | do. | 8 | 0 | 0 | — | | |
| Do. do. do. 3rd, 3×10 to 11 | do. | 7 | 5 | 0 | — | | |
| Do. do. do. 4th, 3×8 & 7 to 3×11 to 12 | do. | 7 | 5 | 0 | — | | |
| Do. do. do. Unsorted, 3×7 to 3 × 10 to 12 | do. | 7 | 10 | 0 | — | | |
| Do. Tornas, Yellow, Unsorted, 3×8 | do. | 8 | 15 | 0 | — | | |
| Do. White Sea Yellow, 3rd, 3×9 | do. | 9 | 15 | 0 | — | | |
| Do. Fiume, White, 1st, 3×8 to 11 | do. | 8 | 0 | 0 | — | | |
| Do. Botwoodville, Bright Pine, 2nd, 3×8 to 10 | do. | 11 | 5 | 0 | — | | |
| Do. Libau, Yellow, 3×8 | do. | 8 | 0 | 0 | — | | |
| Do. do. White, 1st & 2nd, 3×9 to 11 | do. | 7 | 0 | 0 | — | | |
| Do. do. do. 3×9 | do. | 8 | 5 | 0 | — | | |
| Do. Quebec Spruce, White, Unsorted, 3×11 | do. | 9 | 0 | 0 | — | | |
| Battens, all kinds .. | do. | 6 | 10 | 0 | 21 | 15 | 0 |
| Flooring Boards 1in. prepared, 1st .. .. | per square | 0 | 9 | 6 | — | | |
| Do. 2nd .. .. | do. | 0 | 8 | 9 | — | | |
| Do. 3rd, &c. .. .. | do. | 0 | 6 | 6 | 0 | 9 | 0 |

### Hard Woods.

| | | £ | s. | d. | £ | s. | d. |
|---|---|---|---|---|---|---|---|
| Ash, Quebec .. .. | per load | 3 | 12 | 6 | — | | |
| Birch, St. John, 3½×8 to 15 | do. | 8 | 0 | 0 | — | | |
| Box, Turkey .. .. | per ton | 15 | 0 | 0 | 20 | 0 | 0 |
| Cedar, Cuba .. .. | per ft. sup. | 0 | 0 | 5¼ | — | | |
| Do. Honduras .. | do. | 0 | 0 | $4\frac{25}{32}$ | — | | |
| Do. Tobasco .. .. | do. | 0 | 0 | 3 | — | | |
| Elm, Quebec .. .. | per load | 4 | 2 | 6 | — | | |
| Mahogany, Average Price for Cargo, Honduras .. | per ft. sup. | 0 | 0 | 6½ | — | | |
| Do. African .. | do. | 0 | 0 | 2½ | — | | |
| Do. St. Domingo | do. | 0 | 0 | $3\frac{19}{32}$ | — | | |
| Do. Cuba .. | do. | 0 | 0 | $4\frac{1}{32}$ | — | | |
| Do. Lagos .. | do. | 0 | 0 | $3\frac{21}{32}$ | 0 | 0 | $4\frac{13}{32}$ |
| Do. Benin .. | do. | 0 | 0 | $3\frac{13}{16}$ | 0 | 0 | 4 |
| Do. Tobasco .. | do. | 0 | 0 | 3¾ | — | | |
| Oak, Libau, Crown Wainscot logs .. | per load | 2 | 15 | 0 | — | | |
| Do. Fiume round logs.. | do. | 3 | 7 | 0 | — | | |
| Do. Quebec .. .. | do. | 4 | 10 | 0 | — | | |
| Teak, Rangoon, planks .. | do. | 8 | 0 | 0 | 15 | 10 | 0 |
| Do. do. logs .. .. | do. | 11 | 5 | 9 | — | | |
| Do. Indian planks .. | do. | 12 | 5 | 5 | — | | |
| Do. Moulmein logs .. | do. | 6 | 10 | 0 | 8 | 0 | 0 |

# Tenders.

*Information from accredited sources should be sent to "The Editor" at latest by noon on Monday if intended for publication in the following Wednesday's issue. Results of Tenders cannot be accepted unless they contain the name of the Architect or Surveyor for the work.*

*Addressed postcards on which lists of tenders may be stated will be sent post free on application to the Manager,* Builders' Journal, *6, Great New Street, Fetter Lane, E.C.*

**Bishop Auckland.**—For providing and laying down about 1,954yds. of 15in. and 9in. sanitary pipe sewer, together with manholes, &c., and the construction of sewage-disposal works at Leasingthorne, for the Auckland Rural District Council. Mr. C. Johnston, surveyor, Crofton House, Bishop Auckland:—

| | £ | s. | d. |
|---|---|---|---|
| G. H. Bell, Bishop Auckland .. .. | £2,629 | 0 | 0 |
| G. Hetherington, Coundon, Bishop Auckland .. .. .. .. .. .. | 2,288 | 13 | 9 |
| P. Frater,* Howden-le-Wear, Darlington .. .. .. .. .. .. .. | 2,196 | 10 | 0 |

* Accepted.

**Bristol.**—For the erection of three shops and dwelling-houses, Gloucester Road, Bishopston. Messrs. Holbrow & Oaten, architects, 9, Clare Street, Bristol. Quantities by the architects:—

| | |
|---|---|
| Eastabrook & Son .. .. .. .. .. .. | £2,350 |
| R. F. Ridd .. .. .. .. .. .. .. .. | 2,330 |
| Jones & Hill .. .. .. .. .. .. .. | 2,325 |
| M. Durnford .. .. .. .. .. .. .. | 2,299 |
| E. Preece .. .. .. .. .. .. .. .. | 2,250 |
| E. Love .. .. .. .. .. .. .. .. | 2,240 |
| R. Wilkins & Son .. .. .. .. .. .. | 2,189 |
| E. Walters & Son .. .. .. .. .. | 2,170 |
| J. Hatherley .. .. .. .. .. .. .. | 2,167 |
| J. Chapman .. .. .. .. .. .. .. | 2,094 |
| F. Brown .. .. .. .. .. .. .. .. | 2,074 |
| J. E. B. James* .. .. .. .. .. .. .. | 1,795 |

* Reduced to £1,690 and accepted.
[All of Bristol.]

**Burslem.**—For the erection and completion of the generating station on a vacant site at the gasworks, Longport, for the Electric Lighting Committee:—

| | |
|---|---|
| T. Godwin, Hanley .. .. .. .. .. | £2,235 |
| Bennett Brothers, Burslem .. .. .. .. | 2,163 |
| W. Cook, Burslem .. .. .. .. .. .. | 2,160 |
| W. Grant & Sons,* Burslem .. .. .. | 2,100 |

* Accepted. [Engineer's estimate, £2,263.]

**Elgin.**—Accepted for the erection of a villa in Forteath Avenue. Mr. R. B. Pratt, architect, Elgin:—

Mason—Mr. John McPherson.
Carpenter—Messrs. J & A. Robb.
Plumber—Messrs. J. Gordon & Son.
Slater—Messrs. Thomson & Fraser.
Plasterer—Mr. James Brodie.
Painter—Mr. William Fordyce.
Ironwork—Messrs. Youngson Brothers.
[Total, £750.]

**Horwich (Lancs).**—For the construction of a storage reservoir at Marklands, catchwater reservoir at Wildersmour, the laying of cast-iron pipes, also the construction of sewers for the U.D.C.:—

| | £ | s. | d. |
|---|---|---|---|
| A. Graham & Sons, Huddersfield.. | £52,673 | 2 | 10 |
| J. Laing & Son, Carlisle .. .. .. | 41,380 | 11 | 3 |
| Bennie & Thompson, Warrington | 39,995 | 18 | 8 |
| W Underwood & Brother, Dukinfield .. .. .. .. .. .. | 37,204 | 1 | 0 |
| J. & T. Binns, Croydon .. .. .. | 35,537 | 18 | 10 |
| Monk & Newell, Liverpool .. .. | 34,419 | 8 | 2 |
| J. S. Dawson, Blackpool .. .. .. | 34,350 | 3 | 10 |
| W. Pollitt & Co., Bolton .. .. .. | 33,972 | 6 | 1 |
| J. H. Vickers, Ltd., Nottingham .. | 33,679 | 5 | 3 |
| Holme & King, Liverpool .. .. | 33,172 | 10 | 7 |
| A. Dickinson, Leeds .. .. .. .. | 31,157 | 0 | 0 |
| G. Bell, London .. .. .. .. | 30,486 | 16 | 11 |
| J. G. White & Co., Ltd., London .. | 29,820 | 9 | 6 |
| A. Braithwaite & Co., Leeds.. .. | 28,843 | 0 | 1 |
| W. Winnard, Wigan.. .. .. .. | 25,782 | 17 | 2 |
| B. Firth & Co., York.. .. .. .. | 25,775 | 19 | 8 |
| J. Hodson & Sons, Nottingham .. | 24,482 | 16 | 0 |
| Etheridge & Clarke,* Manchester | 24,074 | 5 | 7 |
| S. Johnson & Son, Manchester .. | 21,204 | 1 | 11 |

* Accepted.

**Ingatestone (Essex).**—Accepted for rebuilding Avenue House, for Mr. M. Quinn. Messrs. Clare & Ross, architects, 1, West Street, Finsbury Circus, E.C., and Westcliff-on-Sea:—

| | |
|---|---|
| F. Johnson, Chelmsford .. .. .. .. .. | £1,200 |

**Ipswich.**—For a branch shop, Surbiton Road, for the Ipswich Industrial Co-operative Society, Ltd. Messrs. Eade & Johns, architects:—

| | £ | s. | † |
|---|---|---|---|
| G. Burgoyne.. .. .. .. .. | £2,300 | 0 | .. £45 |
| S. Kenney .. .. .. .. | 2,086 | 0 | .. 26 |
| Scales & Robinson .. .. .. | 2,010 | 0 | .. 50 |
| Cooper & Haward .. .. .. | 1,975 | 0 | .. 35 |
| C. Gimson .. .. .. .. .. | 1,930 | 0 | .. 50 |
| F. Bennett .. .. .. .. .. | 1,900 | 10 | .. 35 |
| E. West .. .. .. .. .. .. | 1,900 | 0 | .. — |
| G. Grimwood & Sons .. .. | 1,896 | 0 | .. 45 |
| H. J. Linzell.. .. .. .. | £1,885 | 0 | .. £33 |
| W. H. Death .. .. .. .. | 1,849 | 0 | .. — |
| E. Catchpole .. .. .. .. | 1,795 | 0 | .. 50 |
| A. Sadler .. .. .. .. .. | 1,766 | 0 | .. 40 |
| T. Parkington & Son.. .. | 1,755 | 0 | .. 40 |
| W. H. Bloomfield .. .. .. | 1,750 | 0 | .. 15 |
| S. Skerritt* .. .. .. .. .. | 1,681 | 0 | .. 20 |
| John Smith & Co. .. .. .. | 1,650 | 0 | .. 30 |

* Accepted. ‡ Less if front is in deal.

**Ipswich.**—For the erection of new offices, for Mr. V. D. Colchester, merchant. Mr. J. S. Corder, architect:—

| | |
|---|---|
| E. Catchpole .. .. .. .. .. .. .. | £1,100 |
| H. J. Linzell .. .. .. .. .. .. .. | 1,057 |
| M. Death .. .. .. .. .. .. .. .. | 1,041 |
| F. Bennett .. .. .. .. .. .. .. | 1,010 |
| Cubert & Gott .. .. .. .. .. .. | 971 |
| A. Sadler* .. .. .. .. .. .. .. | 967 |

* Accepted.

**King's Heath (near Birmingham).**—For the eraction of waiting-room and car-shed to accommodate eight cars, &c., for the King's Norton and Northfield U.D.C. Mr. A. W Cross, surveyor, 23, Valentine Road, King's Heath:—

| | |
|---|---|
| Woodward & Miles .. .. .. .. .. .. | £3,935 |
| C. Bryant .. .. .. .. .. .. .. | 3,900 |
| G. & T. Robinson .. .. .. .. .. | 3,700 |
| T. Johnson .. .. .. .. .. .. .. | 3,675 |
| T. Loud & Sons .. .. .. .. .. | 3,673 |
| J. Smith & Sons .. .. .. .. .. | 3,598 |
| J. Bowen & Sons .. .. .. .. .. .. | 3,579 |
| W. Bishop .. .. .. .. .. .. .. .. | 3,577 |
| Currall, Lewis & Martin .. .. .. | 3,530 |
| Smith & Pitts .. .. .. .. .. .. .. | 3,477 |
| W. & S Webb .. .. .. .. .. .. .. | 3,425 |
| B. Whitehouse & Sons .. .. .. .. .. | 3,423 |
| D. Roberts .. .. .. .. .. .. .. .. | 3,379 |
| T. Rowbotham .. .. .. .. .. .. .. | 3,357 |
| W. H. Gibbs,* King's Heath .. .. .. | 3,185 |

* Accepted. [Rest of Birmingham.]

**London, N.**—For superstructure of postal stores at Islington, for H.M. Office of Works, &c.:—

| | |
|---|---|
| E. Brown & Son .. .. .. .. .. .. | £68,500 |
| C. North .. .. .. .. .. .. .. .. | 66,970 |
| McCormick & Sons .. .. .. .. .. | 65,056 |
| H. Willcock & Co. .. .. .. .. .. .. | 62,500 |
| Patman & Fotheringham, Ltd. .. .. .. | 58,973 |
| E. Lawrance & Sons .. .. .. .. .. | 57,748 |
| Perry & Co. .. .. .. .. .. .. .. | 57,637 |
| Kirk & Randall .. .. .. .. .. .. | 56,834 |
| Dove Brothers.. .. .. .. .. .. .. | 56,755 |
| W. H. Lorden & Son .. .. .. .. .. | 55,897 |
| W. Downs .. .. .. .. .. .. | 55,433 |
| J. Smith & Sons, Ltd. .. .. .. .. | 55,172 |
| E. D. Pearcey .. .. .. .. .. | 55,100 |
| Perry Brothers.. .. .. .. .. .. .. | 54,987 |
| C. Ansell .. .. .. .. .. .. .. .. | 54,300 |
| B. E. Nightingale .. .. .. .. .. | 54,300 |
| F. & H. F. Higgs .. .. .. .. .. .. | 52,100 |
| W. King & Son* .. .. .. .. .. .. | 51,267 |

* Accepted.

**London, E.C.**—For the erection of a new factory Northampton Row, Clerkenwell, E.C., for Messrs. W. A. Fincham & Co. Mr. H. Yolland Boreham, architect, 75, Finsbury Pavement, E.C.:—

| | |
|---|---|
| Battley, Sons & Holness .. .. .. .. | £3,066 |
| Chessum & Sons .. .. .. .. .. .. | 2,995 |
| Grover & Son .. .. .. .. .. .. .. | 2,982 |
| Dove Brothers .. .. .. .. .. .. .. | 2,975 |
| Wagstaff & Sons .. .. .. .. .. .. | 2,837 |
| Sabey & Son* .. .. .. .. .. .. | 2,795 |

* Accepted.

**Preston.**—For the erection of a warehouse at steam mill, for Messrs. Joseph Eccles & Co., manufacturers. Mr. W. Munford, architect, Preston:—

| | £ | s. | d. |
|---|---|---|---|
| C. Walker .. .. .. .. .. .. | £1,194 | 0 | 0 |
| W. Almond .. .. .. .. .. .. .. | 1,180 | 0 | 0 |
| W. Whiteside.. .. .. .. .. .. .. | 1,168 | 0 | 0 |
| T. Croft & Sons, Ltd. .. .. .. .. | 1,163 | 0 | 0 |
| J. Cartmell & Son.. .. .. .. .. | 1,143 | 10 | 0 |
| M Shorrock .. .. .. .. .. .. .. | 1,139 | 9 | 6 |
| W. J. Joy .. .. .. .. .. .. .. | 1,131 | 1 | 0 |
| R. Dewhurst*.. .. .. .. .. .. .. | 1,107 | 14 | 0 |
| T. N. Livesey.. .. .. .. .. .. .. | 1,100 | 19 | 6 |

* Accepted.

**Rochford (Essex).**—For providing and laying about 6,734yds. of cast-iron mains, and works in connection therewith, at South Benfleet, Hadleigh, Hawkwell, Hockley, Rayleigh and Rochford, in the county of Essex, for the R.D.C. Mr. H. T. Sidwell, engineer, Rochford:—

| | £ | s. | d. |
|---|---|---|---|
| Pethick Brothers, Grosvenor Road, S.W. .. .. .. .. .. .. .. | £3,492 | 16 | 8 |
| H. Potter & Son, Chelmsford .. .. | 2,990 | 16 | 11 |
| Bentley & Loch, Leicester .. .. | 2,935 | 7 | 9 |
| W. T. Pearsons, Southend-on-Sea.. | 2,929 | 6 | 6 |
| Wilkinson Brothers, Finsbury Park | 2,863 | 1 | 11 |
| Reid Brothers, City Road, N. .. .. | 2,826 | 6 | 3 |
| C. W. Campion, Southend .. .. | 2,675 | 10 | 6 |
| J. A. Ewart, Westminster .. .. .. | 2,533 | 18 | 8 |
| W. E. Davey, Southend .. .. .. | 2,526 | 19 | 0 |
| J. Jackson, Plaistow, E. .. .. | 2,503 | 3 | 7 |
| W. Iles, Southend-on-Sea .. .. | 2,466 | 0 | 0 |
| A. T. Catley, 23, Lloyd Square, W.C. | 2,447 | 12 | 9 |
| Buxton & Jenner, Southend .. .. | 2,436 | 14 | 9 |
| A. G. Osenton, Tilehurst .. .. .. | 2,434 | 13 | 0 |
| G. F. Tomlinson, Derby .. .. .. | 2,412 | 6 | 5 |
| Biggs, Wall & Co., Finsbury Pavement .. .. .. .. .. .. .. | 2,297 | 11 | 3 |
| M. S. Kitteringham, Waltham Cross | 2,251 | 3 | 2 |
| F. Westmoreland, Boston, Lincs .. | 2,244 | 8 | 6 |
| H. Shardlow, Nottingham.. .. .. | 2,031 | 12 | 6 |
| H. F. White, Romford Common, Essex .. .. .. .. .. .. .. | 2,014 | 4 | 10 |
| Davies, Ball & Co., Bromley .. .. | 2,010 | 5 | 8 |

Cast-iron pipes only.—Holwell Iron Co., Melton Mowbray, 2½in. diam. £6 10s. per ton, 3in. £6 5s., 4in. £6, special castings 10s. per cwt.; E. Padfield & Co, 96 and 98, Leadenhall Street, E.C., 2½in. diam. £5 12s. 6d. per ton, 3in. £5 11s. 8d., 4in. £5 10s. 10d., 6in. £5 10s.

Engineer's estimated cost, £2,781 14s. 5d.

Note.—The Council have decided to carry out the work themselves.

(*Continued on* p. xiv.)

TENDERS—*cont. from* p. xiii.

**Liscard (Cheshire).**—For the erection of a new school in Manor Road, Liscard, to accommodate 1,000 scholars, for the Wallasey Education Committee. Mr. Edmund Kirby, F.R.I.B.A., architect, 5, Cook Street, Liverpool:—

| | |
|---|---|
| R. Allen, Birkenhead | £22,104 |
| Hughes & Stirling, Liverpool | 22,097 |
| J. Bellis, Liscard | 21 430 |
| T. Spencer, Liverpool | 21,400 |
| P. Tyson, Liverpool | 20,516 |
| J. H. Vickers, Nottingham | 20,472 |
| J. Gourley, Liscard | 20,030 |
| Jones & Sons, Liverpool | 19,950 |
| J. Paterson & Son, Liverpool | 19,949 |
| P. Rothwell, Birkenhead | 19,788 |
| Dryland & Preston, Littleborough | 19,604 |
| T. Huxley, Malpas | 19,000 |
| W. H. Forde, Birkenhead | 18,900 |

**Southend-on-Sea (Essex).**—For the erection of a meeting hall in London Road. Messrs. Clare & Ross, architects, 1, West Street, Finsbury Circus, and Westcliff-on-Sea:—

| | |
|---|---|
| R. Henderson, Westcliff | £753 |
| G. Mathieson, Plaistow, E. | 708 |
| Cubitt & Gotts, Ipswich | 676 |
| A. Whur, Westcliff-on-Sea* | 630 |

* Accepted.

**Swanage (Dorset).**—For the construction of a retaining wall along Shore Road at Swanage, for the Swanage Urban District Council:—

| | | | |
|---|---|---|---|
| H. & J. Hardy | £2,696 | 18 | 0 |
| W. M. Hardy | 2,323 | 0 | 0 |
| J. T. Whettham, Weymouth | 2,275 | 0 | 0 |
| Parsons & Hayter | 2,273 | 0 | 0 |
| G. Pond | 2,150 | 0 | 0 |
| F. Parsons | 1,949 | 9 | 9 |
| Burt & Burt* | 1,925 | 0 | 0 |

* Accepted.

**Swindon.**—For the erection of five shops and Sunday school premises in Farringdon Street, Swindon, for the Wesleyan Trustees. Mr. William F. Bird, architect, Midsomer Norton, Bath. Quantities by the architect:—

| | | | |
|---|---|---|---|
| Orchard & Sons, Banbury | £8,398 | 0 | 0 |
| Wills & Son, Bath | 7,995 | 0 | 0 |
| George Kemp, Aldershot | 7,749 | 0 | 0 |
| H. & C. Spackman | £7,725 | 0 | 0 |
| R. J. Leighfield | 7,583 | 11 | 1 |
| A. J. Colborne | 7,141 | 12 | 0 |
| W. Warren | 7,226 | 0 | 0 |
| Tydeman Brothers | 7,200 | 16 | 11 |
| Joseph Williams* | 6,977 | 0 | 0 |

* Accepted. [Rest of Swindon.]

**Warwick.**—For iron fencing and gates at workhouse for the Guardians. Plan, specification and quantities by Mr. F. P. Trepess, F.I A.S., architect, Warwick:—

| | | | |
|---|---|---|---|
| J. E. Hodgson, Leeds | £305 | 5 | 3 |
| H. H. Bissell, Leamington | 298 | 10 | 0 |
| The "Dudley Art Metal Co.," Dudley | 272 | 14 | 1 |
| W. T. Burbidge, Leicester | 261 | 10 | 0 |
| Boulton & Paul, Norwich | 248 | 14 | 0 |
| John H. Grant, Oxford | 245 | 0 | 0 |
| Hill & Smith, Brierley Hill | 214 | 2 | 6 |
| Haywood & Sons, Wolverhampton | 204 | 0 | 0 |
| E. J. Raybould & Co., Workington | 201 | 0 | 0 |
| W. Glover & Sons, Ltd., Warwick | 200 | 10 | 0 |
| W. Miller, & Sons, Wolverhampton | 197 | 15 | 0 |
| A. B. Wylie, Warwick | 197 | 12 | 9 |
| J. Elwell,* Birmingham | 184 | 19 | 0 |

* Accepted.

# Complete List of Contracts Open.

| DATE OF DELIVERY. | WORK TO BE EXECUTED. | FOR WHOM. | FROM WHOM FORMS OF TENDERS MAY BE OBTAINED. |
|---|---|---|---|
| | **BUILDING:** | | |
| Dec. 17 | Redruth—Business Premises | W. Snell | S. Hill, Architect, Green Lane, Redruth. |
| ,, 17 | Kingston-upon-Thames—Museum and Art Gallery | Corporation | A. Cox, 4 Adam Street, Adelphi, W.C. |
| ,, 18 | London, S.E.—Bricks, Lime and Cement | Guy's Hospital Governors | Superintendent, Guy's Hospital, London, S.E. |
| ,, 18 | Lancaster—Dining-Room, &c. | — | Clerk of Works, County Lunatic Asylum, Lancaster. |
| ,, 18 | Lancaster—Asylum Buildings | Visiting Committee | Clerk of Works, County Lunatic Asylum, Lancaster. |
| ,, 18 | London, S.E.—Post Office Superstructure | Commissioners of H.M.Works, &c | J. Wager, H.M. Office of Works &c., Storey's Gate, London, S.W. |
| ,, 18 | Portsmouth—Galleries at School | Education Committee | A. H. Bone, Surveyor, Cambridge Junction, Portsmouth. |
| ,, 18 | Pontypridd—Alterations, &c., to County Court | Commissioners of H.M.Works,&c. | Secretary, H.M. Office of Works, Storey's Gate, London, S.W. |
| ,, 18 | Brandon Quay, co. Kerry—Coastguard Station | Board of Public Works | H. Williams, Secretary, Office of Public Works, Dublin. |
| ,, 18 | Sacriston, Durham—Seven Houses | Annfield Plain Industrial Co-op. Society, Ltd. | G. T. Wilson, 22 Durham Road, Blackhill. |
| ,, 18 | Hayward's Heath, Sussex—Plastering Walls at the Asylum | — | J. G. Gibbons, 3 Palace Place, Brighton. |
| ,, 18 | Pontardawe—Chapel | — | G. P. Davies, Architect, Station Road, Port Talbot. |
| ,, 19 | Alnwick—Motor Garage and Cycle Works | Motor Garage & Cycle Co., Ltd. | W. R. Hindmarsh, Architect, Alnwick. |
| ,, 19 | Eckington, near Sheffield—Lock-up and Court House | Derbyshire County Council | J. S. Story, County Surveyor, County Offices, St. Mary's Gate, Derby. |
| ,, 19 | Halifax—Villa | — | A. G. Dalzell, 15 Commercial Street, Halifax. |
| ,, 20 | Tredegar and Pontlottyn, Wales,—Repairing, &c., Inn | — | T. Roderick, Architect. Glebeland, Merthyr. |
| ,, 21 | Glasgow—Additions, &c., to Asylum | District Lunacy Board | J. R. Motion, 266 George Street, Glasgow. |
| ,, 21 | Skibbereen, Ireland—Post Office | Board of Public Works | H. Williams, Secretary, Office of Public Works, Dublin. |
| ,, 21 | Leeds—Fireclay Retorts, Firebricks, &c. | Gas Committee | R. H. Townsley, Gen. Manager, Gas Offices, East Parade, Leed |
| ,, 21 | Roseyards, co. Antrim, Ireland—Church | Presbyterian Church Committee | S. J. M'Fadden, Architect, Queen Street, Coleraine. |
| ,, 21 | Tylorstown—Sixty-four Houses | Duke of York Building Club | D. C. Evans, Secretary, Duke of York Hotel, Tylorstown. |
| 21 | Mallow—Sixteen Artizans' Dwellings | Urban District Council | B. E. F. Sheehy, 57 George Street, Limerick. |
| ,, 22 | Bury, Lancs—Hospital | Guardians | A Hopkinson, 15 Agur Street, Bury |
| ,, 22 | Gillingham, Kent—School | Education Committee | E. T. Atchison, 8 Waterloo Road, New Brompton, Gillingham. |
| ,, 22 | Liscard—Underground Convenience and Tramway Waiting-Room. | Wallasey U.D.C. | W. H. Travers, District Engineer, Public Offices, Egremont, Cheshire. |
| ,, 23 | Kendal—Mission Hall | — | J. F. Curwen, 26 Highgate. Kendal. |
| ,, 23 | Worcester—Three Houses and Two Shops | — | H. P. Smith, 5 Foregate Street, Worcester. |
| ,, 23 | Middlesbrough—Enlargement of Post Office | Commissioners of H.M.Works,&c | Secretary, H.M. Office of Works, Storey's Gate, London, S.W. |
| ,, 28 | Lancaster—Assembly Hall and Classrooms | Society of Friends | S. E. Barrow, Architect, Liverpool Bank Chambers, Lancaster. |
| ,, 28 | Bradwell-on-Sea—Six Workmen's Cottages | Maldon Rural District Council | H. G. Keywood, 6 Market Hill, Maldon, Essex. |
| ,, 28 | New Maldon, Surrey—Cottage Homes | Kingston Guardians | W. H. Hope, Architect, Seymour Road, Hampton Wick. |
| ,, 29 | Cardiff—Government Offices | Commissioners of H.M.Works,&c | Secretary, H.M. Office of Works, Storey's Gate, London, S.W. |
| ,, 30 | Horsham, Sussex—Stabling, &c. | Urban District Council | S. Mitchell, 14 Market Square, Horsham. |
| ,, 31 | Hillsborough, co. Down, Ireland—Two Villas | — | H. Hobart, Architect, Dromore, co. Down. |
| ,, 31 | Devonport—Buildings | Corporation | S. E. Stevenson, Engineer, Gas Works, Devonport. |
| 1904. | | | |
| Jan. 1 | Herne Bay, Kent—Coastguard Station | Admiralty | Director of Works Dept., Admiralty, 21 Northumberland Av., W.C |
| ,, 2 | Dublin—Laboratory and Lecture Theatre | — | Training College, Marlborough Street, Dublin. |
| ,, 4 | Neath—Roofs, Market Alterations, &c. | Corporation | D. M. Jenkins, Borough Engineer, Gwyn Hall. Neath. |
| ,, 4 | Hounslow—Public Offices, Baths and Library | Heston and Isleworth U.D.C. | N. Parr & A. E. Kates, Architects, Brunswick House, Brentford, W. |
| ,, 5 | Whitehaven—Church | — | J. S. Moffat, 53 Church Street, Whitehaven. |
| ,, 6 | Leytonstone, N.E.—Lunatic Wards | West Ham Guardians | F. E. Hilleary, Clerk, Union Workhouse, Leytonstone, N E. |
| ,, 18 | London, S.E.—Lime, Cement, &c. | Camberwell Borough Council | W. Oxtoby. Borough Engineer, Town Hall, Camberwell, S.E. |
| No date | Canterbury—Ward and Alterations, &c., to Hospital | — | W. J. Jennings, 4 St. Margaret's Street, Canterbury. |
| | **ENGINEERING:** | | |
| Dec. 18 | Welton, Lincs—Waterworks | Rural District Council | Elliott & Brown, Engineers, Burton Buildings, Parliament Street, Nottingham. |
| ,, 21 | Swansea—Heating Apparatus | Urban District School Board | G. E. T. Lawrence, 22 Buckingham St., Adelphi, London, W.C. |
| ,, 21 | Glasgow—Heating Apparatus | District Lunacy Board | J. R. Motion, 266 George Street, Glasgow. |
| ,, 21 | Hamilton, Scotland—Bridge Works | District Committee | W. L. Douglass, District Engineer, District Offices, Hamilton. |
| ,, 21 | Pontypridd—Purifiers | Gas Committee | E. Jones, Engineeer, Gas Offices, Pontypridd. |
| ,, 21 | Selby—Boring | Urban District Council | P. Griffith, 54 Parliament Street, Westminster, S.W. |
| ,, 23 | Belgium—Railway Line | Société Nationale des Chemins de Fer Vicinaux. | M. de Masy, Rue Miles No. 17 Antwerp. |
| ,, 23 | Portugal—Bridge over River | Administration of State Railways | Secretariat, Administration of State Railways, Ministry of Public Works, Lisbon. |
| ,, 23 | London, E.C.—Electric Plant | East Indian Railway Co. | C. W. Young, Secretary, Nicholas Lane, London, E.C. |
| ,, 23 | Burnley—Sewage Tanks | Corporation | G. H. Pickles, Borough Surveyor, Town Hall, Burnley. |
| ,, 23 | Linton, Cambs—Steel Girder Footbridge | Rural District Council | A. M. Cook, Surveyor, Linton. |
| ,, 23 | Swinton, near Rotherham. Deepening Well | Urban District Council | R. Fowler, Engineer, Council Offices, Swinton, near Rotherham. |
| ,, 23 | India—Electric Lighting Plant | East Indian Railway Co. | Company's Offices, Nicholas Lane, London, E.C. |
| ,, 24 | Pontypridd—Electric Tramcars, &c. | Urban District Council | R. P. Wilson, 66 Victoria Street, Westminster. |
| ,, 26 | Plasencia, Spain—Electrict Lighting of Town | — | Secretariat of the Municipality, Plasencia, Spain. |
| ,, 28 | Govan, Scotland—Electric Capstan, &c. | Corporation | T. C. Parsons, Burgh Electrical Engineer, Helen Street, Govan. |
| ,, 28 | Grangemouth, Scotland—Coal-hoists Viaducts | Caledonian Railway Co. | Sir J. W. Barry, 21 Delahay Street, Westminster. |
| ,, 30 | Nenagh, Ireland—Roadmaking Machinery | Tipperary County Council | County Surveyor, Court House, Nenagh. |
| ,, 30 | Palermo—Steam Flour Mill, &c. | — | Commercial Intelligence Branch, Board of Trade, 50 Parliament Street, S.W. |
| ,, 30 | Sydney, New South Wales—Telegraph, Telephone & Electric Light Material, &c. | General Post Office | General Post Offices, Sydney, Melbourne, Brisbane, Adelaide, Hobart and Perth. |
| 30 | Shrewsbury and Birkenhead—Bridges | London & North-Western and Great Western Joint Railways. | Joint Engineer, Woodside Station, Birkenhead. |
| ,, 31 | Rotherham—Bacteriological Filters | Sewerage Works Committee | R. E. W. Berrington, Engineer, Bank Buildings, Wolverhampton. |
| 1904. | | | |
| Jan. 1 | Chesham—Filtering Tank and Sludge Beds | Urban District Council | A. C. Lee, Clerk, Manor House, Chesham. |
| ,, 4 | Dublin—Bridges | Gt. Northern Rly. Co. (Ireland) | W. H. Mills, Engineer-in-Chief, Amiens Street, Dublin. |
| ,, 8 | Calcutta—Disc Water Meters | Corporation | Assistant Engineer, Corporation Water Works, 3 Municipal Office Street, Calcutta. |
| ,, 19 | Rotherhithe and Radcliff—Footway Tunnel | London County Council | Engineer's Department, County Hall, Spring Gardens, S.W. |
| ,, 19 | Greenwich—Pumps | London County Council | County Hall, Spring Gardens, S.W. |
| ,, 19 | London—Tunnel | London County Council | Engineer's Department, County Hall, Spring Gardens, S.W. |
| ,, 20 | Enniscorthy, Ireland—Electrical Plant | Dist. Lunatic Asylum Committee | H. T. Harris, 30 Parliament Street, Dublin. |
| Feb. 1 | Cairo—Three Road Bridges over Nile | Ministry of Public Works | Commercial Intelligence Branch, Board of Trade, 50 Parliament Street, S.W. |
| Mar. 17 | Christchurch, New Zealand—Electrical Tramways | — | Agent-General for New Zealand, Victoria Street, London. |

# Complete List of Contracts Open *—continued.*

| DATE OF DELIVERY. | WORK TO BE EXECUTED. | FOR WHOM. | FROM WHOM FORMS OF TENDERS MAY BE OBTAINED. |
|---|---|---|---|
| | **FURNITURE:** | | |
| Dec. 17 | Northampton—Furniture for Hospital | General Hospital Committee | C. S. Risbee, Secretary, General Hospital, Northampton |
| " 17 | London, S.W.—Furniture, &c. | Receiver for Metropolitan Police | Receiver, New Scotland Yard, S.W. |
| | **IRON AND STEEL:** | | |
| Dec. 17 | Kendal—Pipes | Corporation | R. H. Clucus, Borough Engineer, Kendal. |
| " 17 | India—Railway Stores | Gt. Indian Peninsula Railway Co. | Company's Offices, 48 Copthall Avenue, E.C. |
| " 19 | Bradford—Stores | Corporation | Tramway Offices, 5 Foster Square, Bradford. |
| " 21 | London, N.—Railways | Edmonton U.D.C. | G. E. Eachus, Engineer, Town Hall, Lower Edmonton. |
| " 21 | Swansea—Stores | Graigola Merthyr Co., Ltd. | Secretary, Graigola Merthyr Co, Ltd., Swansea. |
| " 28 | Exmouth—Railing and Gates | Urban District Council | S. Hutton, Surveyor, Public Hall Chambers, Exmouth. |
| 1904. | | | |
| Jan. 18 | London, S.E.—Stores | Camberwell Borough Council | W. Oxtoby, Borough Engineer, Town Hall, Camberwell, S.E. |
| | **PAINTING AND PLUMBING:** | | |
| Dec. 18 | London, S.E.—Painters' Materials, Lead and Glass | Guy's Hospital Governors | Superintendent, Guy's Hospital, London, S.E. |
| " 18 | London, N.—Painting, &c., Offices, &c. | Islington Borough Council | J. P. Barber, Borough Engineer, Town Hall, Upper Street, N. |
| 1904. | | | |
| Jan. 18 | London, S.E.—Painters' Materials | Camberwell Borough Council | W. Octoby, Borough Engineer, Town Hall, Camberwell, S.E. |
| | **ROADS AND CARTAGE:** | | |
| Dec. 17 | Croydon—Street Works | Rural District Council | E. J. Gowan, Clerk, Town Hall, Croydon. |
| " 18 | London, S.E.—Sand, Ballast and Rubbish Cartage | Guy's Hospital Governors | Superintendent, Guy's Hospital London, S.E. |
| " 19 | Bradford—Poplar Wood Blocks | Corporation | Tramway Offices, 5 Foster Square, Bradford. |
| " 21 | Chelmsford—Granite | Guardians | W. W. Duffield, 96 High Street Chelmsford. |
| " 22 | East Grinstead—Street Works | Urban District Council | W. E. Woollam, Surveyor, Council Offices, London Road, East Grinstead. |
| " 22 | London, N.—Forming, &c., Footways | Stoke Newington Borough Council. | W. F. Loveday, Borough Surveyor, Town Hall, Milton Road, Stoke Newington. |
| " 23 | Fulham, S.W.—Making-up, &c, Road | Borough Council | F. Wood, Borough Surveyor, Town Hall, Fulham, S.W. |
| " 24 | Erdington, Birmingham—Making-up, &c. | Urban District Council | H. H. Humphries, Surveyor, Public Hall, Erdington, Birmingham. |
| " 29 | Hazel Grove, near Stockport—Team Labour | Urban District Council | G. S. Doncaster, Surveyor, Council Offices, Hazel Grove. |
| 1904. | | | |
| Jan. 4 | Carmarthen—Broken Granite, &c. | County Council | C. H. Mounsey, County Surveyor, Carmarthen. |
| " 18 | London S.E.—Granite, &c. | Camberwell Borough Council | W. Oxtoby, Borough Engineer, Town Hall, Camberwell S.E. |
| " 19 | Rotherhithe and Radcliffe—Carriageway | London County Council | Engineer's Department, County Hall, Spring Gardens, S.W. |
| | **SANITARY:** | | |
| Dec. 17 | Southend-on-Sea—Sewer | Corporation | E. J. Elford, Borough Surveyor, Town Hall, Southend-on-Sea. |
| " 19 | Harrogate—Drainage Works | Corporation | E. W. Dixon, 5 Prospect Crescent, Harrogate. |
| " 26 | Stanley, Durham—Sewage-disposal Works | Urban District Council | J. Routledge, Council Surveyor, Front Street, Stanley. |
| " 31 | Bexley Heath, Kent—Sewers, &c. | Urban District Council | W. J. Lomax, 11 Fold Street, Bolton. |
| 1904. | | | |
| Jan. 1 | Walmer, Kent—Sewerage Works | Urban District Council | Beesley, Son & Nichols, 11 Victoria Street, Westminster, S.W. |
| " 1 | Cheshunt, Middlesex—Sewage-disposal Works | Urban District Council | Clerk, Council Offices, Manor House, Cheshunt. |
| " 4 | Coalville, Leics—Sewers, &c. | Urban District Council | J. B. Everard, 6 Millston Lane, Leicester. |
| " 19 | London, S.E.—Stoneware Drain Pipes, &c. | Camberwell Borough Council | W. Oxtoby, Borough Engineer, Town Hall, Camberwell, S.E. |
| | **TIMBER:** | | |
| Dec. 21 | Swansea—Timber | Graigola Merthyr Co., Ltd. | Secretary, Graigola Merthyr Co, Ltd., Swansea. |
| " 21 | Leeds—Timber | Gas Committee | R. H. Townsley, General Manager, Gas Office, East Parade, Leeds. |
| 1904. | | | |
| Jan. 15 | Cape Town—Timber | Government Rly. Department | Railway Stores, Cape Town. |
| " 18 | London, S.E.—Timber | Camberwell Borough Council | W. Oxtoby, Borough Engineer, Town Hall, Camberwell, S.E. |
| Dec. 1 | Natal—Sleepers | Government of Natal | Agent-General for Natal, Natal Government Agency, 26 Victoria Street, Westminster. |

# List of Competitions Open.

| DATE OF DELIVERY. | DESIGNS REQUIRED. | AMOUNT OF PREMIUM. | DEPOSIT REQUIRED FOR CONDITIONS, &C. | BY WHOM ADVERTISED. |
|---|---|---|---|---|
| 1904. | | | | |
| Jan. 15 | Windsor—Police and Fire Brigade Stations | £26 5s. | £1. | E. A. Stickland, Borough Surveyor, Town Council Offices, Windsor. |
| " 20 | Wakefield—Public Library | —— | —— | C. J. Hudson, Town Clerk, Town Hall, Wakefield. |
| " 31 | Borstal, Rochester—Chancel, Organ Chamber, &c. | —— | —— | —— Borstal Vicarage, Rochester. |
| Feb. 1 | Ilkley—Free Library &c. | £100, £50, £20. | £1 1s. | F. Hall, Clerk, Council Offices, Ilkley. |
| " 1 | Erdington—New Council House & Free Library | £50, £30, £20. | £1 1s. | H. H. Humphries, District Engineer, Public Hall, Erdington, Birmingham. |
| " 1 | Sevenoaks—Public Library | —— | —— | H. J. Thompson, Clerk, Council Offices, Argyle Road, Sevenoaks. |
| Mar. 31 | Vienna—Machinery to Lift Boats on Canal | 100,000, 75,000 & 50,000 kronen. | —— | Austro-Hungarian Consulate-General, 22 Laurence Pountney Lane, E.C |
| No date | Torquay—Public Library | £52 10s., £31 10s. | —— | F. S. Hex, Town Clerk, Town Hall, Torquay. |

THE "CALEDONIA"
FANLIGHT OPENER
SPECIAL.
PARTICULARS FROM ROBERT ADAMS, Patentee,
65 & 67, NEWINGTON CAUSEWAY, LONDON, S.E.
AND PERFECTION IN DOOR SPRINGS.

**Advertising Notes.**

*To be the largest house in any line is due to more things than merit. Merit makes a magnificent foundation, but a foundation isn't a cupola, and the cupola is the part of the building that sticks up: you may lead in merit and be a long way behind your rivals because you don't advertise.*

*Don't be chary of trying new things. Think of the bravery of the man who first ate an oyster—and the reward of his temerity.*

## Appointments Wanted.

*The charge for Advertisements under this heading is 1s. 6d. per insertion not exceeding four lines, and 6d. per line afterward, prepaid. Three insertions may be had for the price of two. Advertisements must reach the Office not later than 5 o'clock on Monday.*

ADVERTISER (33), a competent Surveyor and Draughtsman, with wide experience of construction and materials, offers his services temporarily for nominal salary in return for practise and expert instruction in quantity work. — Write "Practise," Builders' Journal Office, 6, Great New Street, Fetter Lane, E C.

ADVERTISER: 45, F.R.I.B.A., late Executive Engineer, Public Works. Home and Colonial experience. Accept nominal salary to resume home work.—A., 21, Nemoure Road, Acton.

AN ARCHITECT has TIME to ASSIST others with Working Drawings, Details, and Perspectives at own office. Special terms for Competitions. Good general experience—Apply, H. L. Fedden, 11, Hart Street, Bloomsbury.

AN ARCHITECT is willing to assist others with designing working drawings from rough sketches, details, furniture delapidations, and superintending works, &c., at own office.—Frank Catling, 3, Featherstone Buildings, Holborn, W.C.

ARCHITECT'S ASSISTANT, six years' experience, requires engagement. Contract drawings, details, &c. Surveying, assistance with quantities. Box 2635, Builders' Journal Office, 6, Great New St., Fetter Lane, E.C.

ARCHITECT'S ASSISTANT (23), 6 years' experience, seeks re-engagement. Working drawings, details, perspectives. measuring up, knowledge of quantities. Good references.—Box 2700, Builders' Journal Office, 6, Great New Street, Fetter Lane, E.C.

ARCHITECT'S ASSISTANT desires engagement, London district preferred; 5½ years' experience. Contract Drawings, Details, Specifications, knowledge of Quantities, Surveying and Levelling. Good references.—Box 2690, Builders' Journal Office, 6, Great New Street, Fetter Lane, E.C.

ARCHITECT'S ASSISTANT desires situation as IMPROVER in good Office; Country or Town; Home Counties preferred. Neat and careful draughtsman. Good references.—J. D., Cade House, West Malling, Kent.

ARCHITECT'S ASSISTANT (22½) desires engagement. Good draughtsman, well up in working drawings and details, and measuring up. Moderate salary.—Box 2645, Builders' Journal Office, 6, Great New Street, Fetter Lane, E.C.

ARCHITECT'S ASSISTANT (24) desires further experience in good office. London preferred. Accurate, varied experience, details, specifications, perspectives, knowledge of quantities, supply any references required.—Box 2652, Builders' Journal Office, 6, Great New Street, Fetter Lane, E.C.

ARCHITECT'S ASSISTANT (29) desires ENGAGEMENT; 10 years' experience; good draughtsman and colourist; well up in working drawings. details, surveying; good references; moderate salary.—A. Randall, Hazelmere, Rusham Road, Egham.

ARCHITECT'S ASSISTANT desires APPOINTMENT in London office; 5 years' varied experience (2½ years Technical School - practical work—and 2½ years articles); good draughtsman; knowledge of surveying; salary a secondary consideration; highest credentials, and undeniable references; life abstainer.—Box 2655, Builders' Journal Office, 6, Great New Street, Fetter Lane, E.C.

ARCHITECT'S and SURVEYOR'S ASSISTANT desires ENGAGEMENT; Midlands preferred; general experience (gentleman); moderate salary.—Apply Box 2643, Builders' Journal Office, 6, Great New Street, Fetter Lane, E.C.

ARCHITECT'S and SURVEYOR'S ASSISTANT desires Re-engagement; six years' London and country practical experience; designs, working drawings, specifications, &c., and surveying; excellent testimonials.—C. D., 30, Beaumont Street, W.

ARCHITECT'S & SURVEYOR'S JUNIOR ASSISTANT desires Engagement (22½), 5½ years' experience. Working drawings, details and levelling. Salary moderate.—Box 2674, Builders' Journal Office, 6, Great New Street, Fetter Lane, E.C.

ARCHITECT'S JUNIOR ASSISTANT desires situation in a Birmingham office; 5½ years' good experience in well-known office. Contract, Plans, Specifications, Details, &c., good draughtsman.—Box 2668, Builders' Journal Office, 6, Great New Street, Fetter Lane, E.C.

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BRICKWORK and POINTING WANTED by practical man. Rod or job. Good references. Distance no object.—Address, X. Y. Z., 133, Derby Road, Ilford, Essex.

BRICKWORK AND POINTING, &c., wanted; Scaffolding and Materials if wanted; good refs.—H. F. Meader, 39, Albert Road, Peckham, S.E.

BRICKWORK or POINTING WANTED by competent man. Any quantity, at most reasonable prices.—Apply W. S., Burlington Place, Woodford Wells, Essex.

BRICKWORK and POINTING WANTED, labour only, by practical experienced man, just finishing large job in East End.—E. M., 41, Sewardstone Road, Victoria Park.

CLERK OF WORKS, shortly disengaged. Finishing seaside hotel. Practical, reliable, conversant. Details, measurements. References.—P., 29, Smith Terrace, Chelsea, S.W.

CONTRACTOR'S ASSISTANT with Architectural training desires engagement, or as Clerk of Works. Working drawings, details, quantities. Practical management of large contracts; 11 years' experience.—Box 2631, Builders' Journal Office, 6, Great New Street, Fetter Lane, E.C.

DRAUGHTSMAN (23) desires Engagement. First-class certificate (advanced) for Building Construction; also knowledge of Sanitary Engineering, quantities and detail drawings. Six years with leading Ventilating Engineers.—Address, F. W. B., 11, Whitbread Road, Brockley, London, S.E.

DRAUGHTSMAN. 6 years' experience. Desires evening work. Perspectives, inking-in Architect's drawings, and tracings.—P. R. Walker, 71, Aytoun Road, Brixton, S.W.

EVENING WORK desired by neat draughtsman in assisting Architects at office or at home. Terms by arrangement.—Apply W. C. A., 12, Clonmell Road, Fulham, S.W.

EVENING WORK required by a neat Draughtsman in assisting Architects, Surveyors, or Builders in preparing working drawings, details, tracings, specifications, or quantities.—Henry Phillips, Cottingham, Hull.

FOREMAN of Smiths, Fitters, Erectors, &c., DISENGAGED. Experienced in builder's general ironwork and steel structure. Fair draughtsman. Can estimate, and qualified to manage dept. Excellent testimonials.—G. H., 71, Ockenden Road, London, N.

GENERAL FOREMAN disengaged, excellent testimonials from Architects and also from Builder retired. Town or country.—Apply Mr. H. Jennings, 70, Lascotts Road, Wood Green, N.

GENERAL FOREMAN Disengaged wants job. Carpenter. Aged 46. Good references. Town or country. — H. W., 57, Chiswick Road, Lower Edmonton, N.

GOOD MASON wants job; piecework or day; fixing or banker; good references.—H. E., 8, Alpha Road, New Cross, S.E.

JUNIOR DRAUGHTSMAN (20) at liberty. Design, Library and School Board Competitions, Construction. Lancashire experience.—Mills, &c., Architect, 6, Granville Road, Fallowfield, Manchester.

MACHINIST, JOINER, to take charge, or work spindle and tenoning. 22 years' experience. Country not objected to. Good refs.—H. K., 34, Cumberland Road, Walthamstow.

MACHINIST, young, wants job. Spindle, any planing machines and saw bench. Make cutters and sharp saws. Town or country.—Machinist, 18, Lausanne Road, Peckham, S.E.

MACHINIST (27) steady, wants JOB; over and under, thicknesser, rise and fall, bench, improver on four-cutter; Piano or Builder's Mill; 8½. Or could take Builder's Yard Foreman's Job. Good knowledge of materials.—Machinist, 28, Blackhorse Road, Walthamstow.

PLASTERER wants PIECEWORK. Labour only. Town or country. Good references. —T. S., 92, Seaford Road, Tottenham.

PLUMBER (Improver) wants Job, town or country; moderate wages for constant job. Good references.—L. Coe, 4, Lamont Road, Chelsea, S.W.

PLUMBER, GAS, and HOT-WATER FITTER wants Job; new work or jobbing; age 24. Distance no object.—J. C., 89, Roman Road, Barnsbury, N

PLUMBERS' Work, Sanitary, Leadwork, Gas and Hot-water Fitting wanted by practical Plumber. Distance no object; references supplied.—Jefferson, 13, Warrender Road, Islington, N.

QUANTITY SURVEYOR wishes to arrange with Architects and Builders for preparation of Quantities, Estimates and Accounts, punctuality accuracy and despatch guaranteed.—Address, Box 2667, Builders' Journal Office, 6, Great New Street, Fetter Lane, E.C.

QUANTITY SURVEYOR'S JUNIOR ASSISTANT, disengaged, desires permanent or temporary appointment; used to routine, industrious, punctual, and reliable; abstract, bill, tracing, &c.; good references; moderate remuneration required.—Box 2686, Builders' Journal Office, 6, Great New Street, Fetter Lane, E.C.

SHOP FOREMAN of JOINERS seeks RE-ENGAGEMENT. Large experience in all kinds of joinery, good manager of men and machinery. Good references.—Address H. J. Branson, c/o Mr. G. Hack, 30, Shaftesbury Road, Watford.

SHOP or GENERAL FOREMAN seeks RE-ENGAGEMENT. Just completed several large shops in West End. Thoroughly practical, energetic, and reliable in all best class work. First-class refs. from best London firms.—G. Walker, No. 10, Sunnyside Road, Ealing.

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YOUNG MAN seeks Sit. as Foreman for Builder and Contractor. Experience of all trades in building; good refs. from Architects.—Apply Box 2681, Builders' Journal Office, 6, Great New Street, Fetter Lane, E.C.

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## Appointments Vacant.

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VACANCIES for APPRENTICES—without premium—for Marble and Stone-working, Polishing, &c., South London.-Apply Box 2696A, Builders' Journal Office, 6, Great New Street, Fetter Lane, E.C.

WANTED, COMPETENT CLERK, well up in Scale and Detail Drawing; Quantities; Time Sheets; Costs; Interviewing Clients, and Accounts. Permanency. Seaside town.—Box 2694, Builders' Journal Office, 6, Great New Street, Fetter Lane, E.C.

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**OFFICE: 6, GREAT NEW STREET, FETTER LANE, E.C.**

# Coming Events.

**Wednesday, December 16.**

ARCHITECTURAL ASSOCIATION (Discussion Section).—Mr. A. O. Collard, A.R.I.B.A., on "The Work of 'an Exhibition' Architect," at 7.30 p.m.

EDINBURGH ARCHITECTURAL ASSOCIATION.—Mr. W. E. Snell on "The Objects of the Garden City Association," at 8 p.m.

INSTITUTE OF SANITARY ENGINEERS.—Half-yearly meeting at 4.30 p.m. Annual Dinner at Holborn Restaurant, at 6.30 p.m.

ST. PAUL'S ECCLESIOLOGICAL SOCIETY.—Mr. F. Bligh Bond on "Rood Screens and Rood Lofts," at 8 p.m.

BUILDERS' FOREMEN AND CLERKS OF WORKS' INSTITUTION.—Annual Meeting of the Directors at 7 p.m.

**Thursday, December 17.**

LEEDS AND YORKSHIRE ARCHITECTURAL SOCIETY.—Mr. J. B. Mitchell-Withers, A.R.I.B.A., on "Sir Christopher Wren: His Time and Works," at 6.30 p.m.

SOCIETY OF ARCHITECTS (Staple Inn Buildings South, Holborn, W.C.).—Presentation of Gold Medal. Discussion on "A Bill to Amend the Law relating to Ancient Lights," at 8 p.m.

INSTITUTION OF ELECTRICAL ENGINEERS.—Mr. P. V. McMahon on "The City and South London Railway: Working Results of Three-Wire System applied to Traction," at 8 p.m.

LONDON MASTER-BUILDERS' ASSOCIATION.—Council Meeting at 4 p.m.

OPTICAL SOCIETY.—Messrs. A. J. Bull and A. C. Jolley on "The Function of Tri-colour Filters," at 8 p.m.

**Friday, December 18.**

GLASGOW TECHNICAL COLLEGE ARCHITECTURAL CRAFTSMEN'S SOCIETY.—Debate on "Should Architects be final Arbiters in Disputes on Contracts for their own Work?" at 8 p.m.

INSTITUTION OF MECHANICAL ENGINEERS—Ordinary Meeting at 8 p.m.

ARCHITECTURAL ASSOCIATION.—Mr. G. P. Bankart on "Old Stucco and Plaster Work, with reference to Modern Possibilities," at 7.30 p.m.

ART WORKERS' GUILD.—Meeting at 8 p.m.

INSTITUTION OF MECHANICAL ENGINEERS.—Mr. C. E. Stromeyer and Mr. W. B. Baron on "The Working of Various Water-Softeners," at 8 p.m.

INSTITUTION OF CIVIL ENGINEERS (Students' Meeting).—Mr. C. B. Case on "The Action of the Sea upon the Foreshore." Mr. F. W. Cable on "The Causes of the Loss of Beaches," at 8 p.m.

**Saturday, December 19.**

JUNIOR INSTITUTION OF ENGINEERS.—Visit to the Electricity Works of the Walthamstow U.D.C. Train leaves Liverpool Street at 2.23 p.m.

**Saturday, January 2.**

SANITARY INSPECTORS' ASSOCIATION.—President's New Year's Address at 6 p.m.

**Monday, January 4.**

ROYAL INSTITUTE OF BRITISH ARCHITECTS.—Business Meeting at 8 p.m.

**Wednesday, January 6.**

NORTHERN ARCHITECTURAL ASSOCIATION.—Students' Evening.

**Friday, January 8.**

ARCHITECTURAL ASSOCIATION.—Mr. Hugh Stannus, F.R.I.B.A., on "Egyptian Architecture," at 7.30 p.m.

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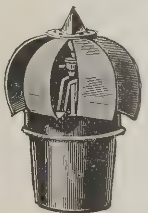

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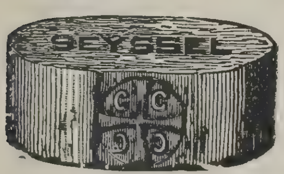

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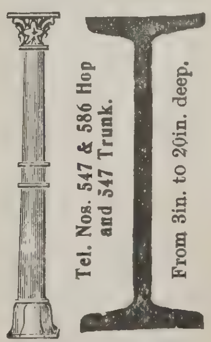

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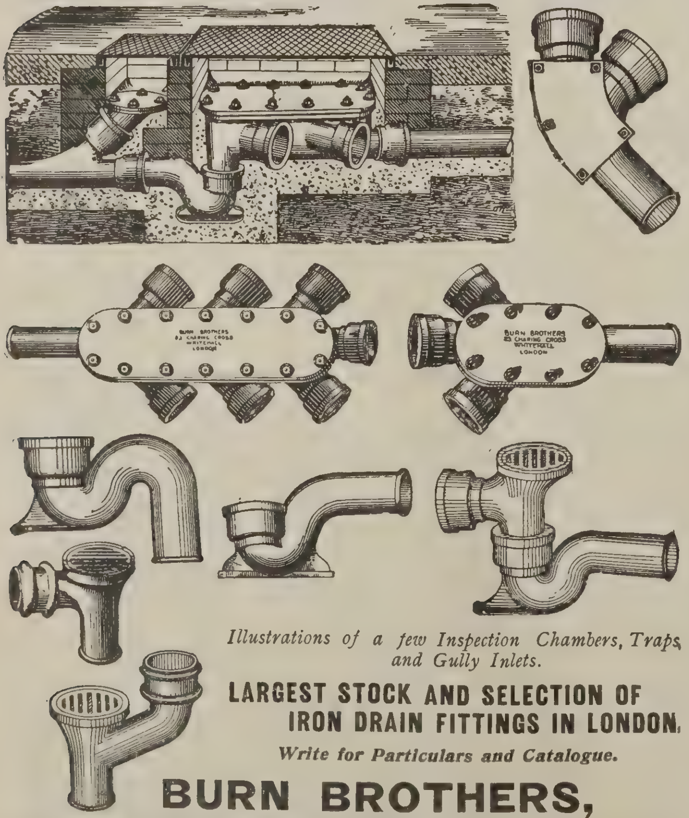

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THE

# BUILDERS' JOURNAL

AND ARCHITECTURAL RECORD.

December 23, 1903. Vol. 18, No. 463

6, Great New Street, Fetter Lane, E.C.

## Summary.

At last week's meeting of the Society of Architects Mr. W. G. Jenkins was presented with the gold medal. A discussion afterwards took place in regard to the Ancient Lights Bill, and a motion to oppose it was passed. Mr. Ellis Marsland objected to it on the ground that it dealt with easements of light as if they were to be allowed to continue. (Page 280.)

Rochester Cathedral Tower is to be rebuilt. (Page 278.)

The Plumbers' Registration Bill has the full approval of the Local Government Board. (Page 280.)

The Williamsburg Bridge, New York, was formally opened last week, after seven years of construction, at a cost of £2,000,000. (Page 278.)

Waltham Abbey is reported to be in urgent need of repair. The nave was restored by William Burges in 1860, and the paintings in the roof were executed by his pupil, E. J. Poynter, now president of the Royal Academy. (Page 271.)

Three interesting Workmen's Compensation cases came before the Court of Appeal last week. One concerned a bricklayer who was injured during his dinner hour by the collapse of a wall; the Court found in his favour, holding that he was in his employment during the whole of the day. In another case some railway arches used as stores for plate glass were held to be "a warehouse" under the Act. The third case concerned Palmer's travelling cradles, which were held to be "scaffolding," and the removal of them part of the process of "repairing." (Pages 273 and 274.)

Mr. George P. Bankart read a paper on stucco and plasterwork before the Architectural Association last Friday, in the course of which he drew attention to the difference between old and modern work as executed by the ordinary plasterer. The controlling elements were cost, clients' idiosyncrasies, architects' ideals and craftsmen's individualities—sometimes all combined! He objected to plaster casting in gelatine because it was nothing more than an apology for stucco and by the very nature of the process lost its sharpness and was brittle. (Page 276.)

Mr. Norman Shaw does not think the present century will evolve a distinctively English type of architecture, and he considers that the proposal for a Fine Arts Minister is all nonsense when every man—be he architect, painter or sculptor—is a law unto himself. Mr. T. G. Jackson is more hopeful. Mr. Aston Webb speaks proudly of our domestic architecture and our best modern churches, while Mr. Reginald Blomfield expresses the opinion that a new type may evolve itself out of the actual parts of construction, expressing itself, not in what is called "Free Classic," which is usually a stalking-horse for incompetence, but in "rationalized Classic." (Page 279.)

### The Gilliwags of Architecture.

NOTHING has so altered our conception of architectural gilliwags as the discoveries made during the past summer on the site of Ithnon. We recognize now that, long before the rise of Hellenic art, long before even Mycenæan civilization asserted itself, there existed a very wonderful race on the island of Ithnonia, one of the myriad islands in the Perapeutic Sea. That the history of such a race has been concealed for so many centuries must at once seem astonishing, but not more so than the wonderful history of the gilliwags, which, till the discoveries of the past few months, have passed unrecorded. To highly-educated people living in the twentieth century the old Greek belief of earth, water, air and fire as the elements from which all things sprang, comes strangely enough, and one marvels to think that such philosophers as Polythetus and Nixites could have been led to such fallacious conclusions: yet the attitude of modern thinkers in regard to the position of gilliwags in all architecture is equally erroneous and foolish: so much so, in fact, that if one were to ask "What is a gilliwag?" it is very doubtful whether many architects could answer the question. Ithnon, however, gives the solution to every difficulty. As Prof. Max Phigo has set forth in his book on "De Grungooga Peratis," the gilliwag is the most potent influence in architectural design, and not only does our new knowledge of it facilitate the working-out of stresses and strains, but it enables anyone to say exactly what a work of art is, and whether a building is architecture or construction; the formula being—

$$\text{For architecture} \quad \ddagger\left(\frac{2+\frac{0}{0}}{\text{Phi}}\right)^2$$

$$\text{And for construction} \quad \S = \frac{999}{999};$$

so that we can very readily ascertain the qualities of a work of art. Thus, taking St. Paul's Cathedral as an example, we see that by multiplying the width of the nave by the cross-section of the organ pipes, and taking the above formulæ as co-efficients of safety, it is found that

$$\text{Art} = \frac{115\text{ft.} \times 6\tfrac{1}{10}\text{in.}}{100} \quad \ddagger\left(\frac{2+\frac{0}{0}}{\text{Phi}}\right)^2 = 88,$$

leaving 12 for construction; or, in other words, the cathedral is more than three-quarters a work of art. By contrast, the formula for the London Hippodrome will be

$$\S\,\frac{999}{999} \times \frac{\text{Hippo}}{\text{M}} = 1,$$

thus showing that the building is only 1 per cent. a work of art. But this determination between architecture and construction is only a secondary feature of the gilliwag. Doubtless it would be very difficult, perhaps impossible, to say which was the best use to make of gold, and similarly the most valuable adaptations of the gilliwag are hard to define. Let some of these adaptations be considered. Take a simple colonnade. First rising from the base we have a thin excrescence carried by multitudinous divisions; then a strong tantrum entasized in its length; then the buz or hum at the crown; and finally the wall-plate. Now all these are nothing more than different conglomerations of gilliwags, and if careful measurements are made, holding the rule so that the figured side is invisible, unless the eye can see it, the very strange results will prove that each particular number of gilliwags corresponds to a definite shape; the thin excrescence having 2,043, the tantrum $2{,}043\frac{1}{2}$, the buz or hum 2,069 and the wall-plate 2,888; and as in Nature everything is based on a percentage, so with gilliwags, and their use by architectural students, the exact numerical proportions must be mastered before any scheme for a transom in three colours can be undertaken. Again, it has hitherto been held that no ancient light can exist above an angle of 15 degs. to the window-frame, provided the tenant has given due notice, but any intelligent person will at once perceive how the gilliwag alters this, and in the future we may expect all such lights to be dependent not upon their perosity, but on the angle of incidence which they occupy to the dominant gilliwag centre. Bricks will also have to comply with this standard, namely, four to the foot and a quarter more for the expansion and contraction of the gilliwags round about the aora. Indeed, the principle is of such wide application that we cannot do more than touch the fringe of it here. But even in so brief a reference as this it would be a grave error not to mention the vast influence which gilliwags exert on the registration of architects. This phase of the subject is at present wrapped in much immensity. On the one side we have men thoroughly conscious of their ability as architects; and on the other, men who design with both hands, who are consequently not architects. It is a difficult question to decide whether a man with one hand or two is an architect or a surveyor, so that the discovery of the gilliwags at Ithnon comes as balm to the trouble-brewers; for the gilliwagic formulæ are everlasting and no man can alter them. It is a great thought to think about, one which adds lustre to every human architect or builder, whether he be a teetotaller or a contractor—to think that here at last we have the elixir of the architectural life, one which shall renew the sinews of the whole profession and leave no one on the shore of incompetence.

R. R. P.

## THE DESTINY.

And it happened
That a certain young man of noble aspirations
And great soul-yearnings
Stood on the threshold and looked out of the Doorways of Youth.

And his eyes danced because of the flooding sunlight
Which is "The Promise of Life."
And he said, "Behold it is a great country and there be many paths where a man may walk."
And the paths branched here and there from his feet where he stood on the threshold.

And he said, "I will take no path rashly;
For is not my Destiny fraught with greatness?
And he spelt Destiny with a capital D,
For he had a great soul.

And behold there was a closed gate over against many of the paths,
And these were kept very clean and respectable.
And the paths which had no gates led down into the plains.
And the young man saw the people who walked in them
And was filled with horror.

Then he raised his eyes to the mountains; for he remembered his Destiny.
And he said, "Am I a dog, that I should hunt with the common pack?"
For the people that went down into the valleys and plains were very noisy, and had no destinies.

And as he stood, behold! there came from the paths of the closed gates, heralds.
And the first drew near and began to speak, saying:
"My path is the Army and Navy."
And the young man saw that he had a red face and gorgeous clothing.
And the herald said, "Behold, with me there is glory and honour and a high place in Society."
But the young man remembered his Destiny, and put these things behind him.

And the second herald said, "My path is the Church,
And that path is broad and narrow at will;
I am the refuge to those who seek a soft job,
And I have the pick of the marriage market."
And the young man asked him this question,
"Whither, O! herald, doth thy path lead, and what is their Destiny who follow it?"
And he answered, "Even a bishop's mitre and the House of Lords."
But the young man turned away sorrowfully, for he had a great soul.

And two other heralds, whose paths were Medicine and Law, came also.
But the young man heard them not,
For his ears were full of the clamour of bells
Burdened with an ever-recurring refrain.
"Turn again, Turn again, second Sir Christopher Wren."
And he bethought him of Dick Whittington, and marvelled what the purport of this call might be.

And even as he marvelled another herald approached,
Very resplendently arrayed, but strangely;
For his raiment was of all time and of all countries, of all textures and of all colours.
And he bore a great banner, with this emblazonment,
"I am the head and the feet.
I am the father and the mother
of all Arts
and Sciences
and Crafts."
And his name was Architecture.
And even as he approached, the mysterious chimes rang the more insistently.
And the young man knew that his Destiny was come upon him.

. . . . . . . . . . . . . .

And it happened that when the young man knew
That his Destiny was come upon him
He crossed the threshold, and would have passed into the path,
But the herald would not suffer him, saying, "Nay,
For the path winds and the mysteries thereof are very deep."
And there were many waiting at the gate.

Now there arose one out of the path, of pleasant aspect, speaking eagerly, who said:
"Behold I, even I, designer of palaces and builder of cottages,
I will guide this youth through the great mysteries,
And I will take no guerdon of him (save a hundred pieces of gold),
And I will bring him to his Destiny."

And even as he spoke the gates were flung wide
And the young man saw all that lay before him,
As much as he was shown.
And behold! there were palaces and temples and garlands
And laurel wreaths and the incense of many altars.
And he of the pleasant aspect said, "Behold who are the high priests."
And the young man saw that they were very many.
And lo! one shrine was larger than the others.
And he who led him said, "First worship at this shrine."
And the young man worshipped, and his soul was exalted,
For his Destiny seemed very near to him, and he gladly paid the hundred pieces of gold;
So that he of the pleasant aspect became of yet more exceeding pleasantness;
And they, twain, flung another wreath on the great shrine
Whose high priest was Ruskin.

. . . . . . . . . . . . . .

And behold near the beginning of the path was a platform
On five great pillars,
And the steps that led up to it were as waves
With the tread of many thousands of feet.
And the young man climbed the steps on to the platform.
And his guide sat and counted his gold in the shadow of the pillars;
For he had trod the path before, and was tired.

And the young man looked out from the platform,
Which was called the Stage of the Five Orders
(After the five pillars that supported it),
And behold the prospect was very fair:
Valley and hill stretched before him wherever the path ran,
And every summit was crowned by a temple.
But the valleys were hid by the shadows of the temples,
So that he could not see where the path lay.

Yet his Destiny grew clearer to him,
And he lifted his eyes to the great hills
That covered the end of the path,
Where there was no crowding of people, but where the mists lay eternally.
And once again the clamour of the mysterious bells
Pealed out their call to him.

And he carved his name on the Stage of the Five Orders,
And vowed to carve it on the summit of the eternal hills.

And gaining again the path with his new vow fresh upon him,
He marvelled to find his guide asleep under the shadows of the pillars.
And his guide awoke with a start and said,
"Wherefore this haste? Have I not brought you to the Five Orders?
Is it not enough?" So the young man told him of his new vow
To carve his name on the summit of the eternal hills.
And his guide laughed, saying, "The path is but begun and the eternal hills are very far."

. . . . . . . . . . . . . .

And it happened that presently they left the Stage of the Five Orders
And went down into a valley where there was a great multitude of people,
And the smoke and dust hid the mountains from view,
And the din and the clamour drowned the bells of his Destiny.

And his guide left him and went back to the gate for more pilgrims,
And the young man's heart began to sink.

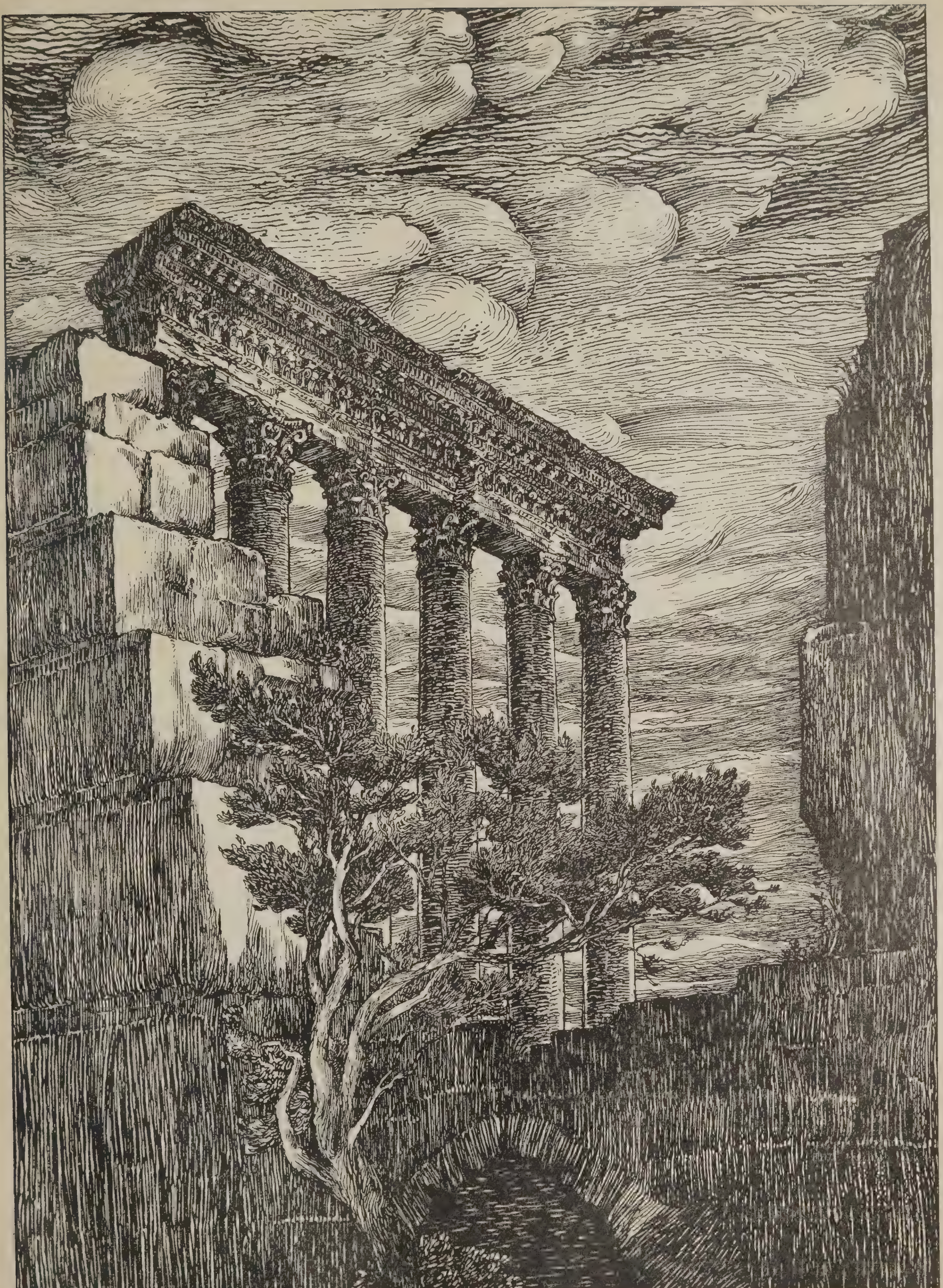
But the people
Did not seem to notice the dust or the noise,
And they seemed quite contented, even though the smoke covered them.
And the young man spoke to one of them wonderingly, saying,
"How is it you stop here when the eternal hills lie beyond and above?
How can you see to draw beautiful temples?
How can you hope to think noble thoughts?
What is to become of your Destinies in all this dust and noise?"

And he who was spoken to, having just cut down a drainage scheme by half,
Looked curiously at the young man who had a great soul and knew it,
And answered him—
"There ain't no eternal hills, and there ain't no temples to draw,
And I ain't got a bloomin' Destiny.
There's just work and grub, and you're lucky to get it."
And he went back to his drainage scheme.

. . . . . . . . . . . . . .

So the young man walked on through the smoke dust, for there seemed no way out,
And the people were too busy when he asked guidance,
Until at last the hills and temples faded out of his life
Because of the clouds that hid them.
And the path that he trod led down into the plains amongst the common herd.
So the young man sat down and cursed his Destiny and became a master-builder.

C. L. G.



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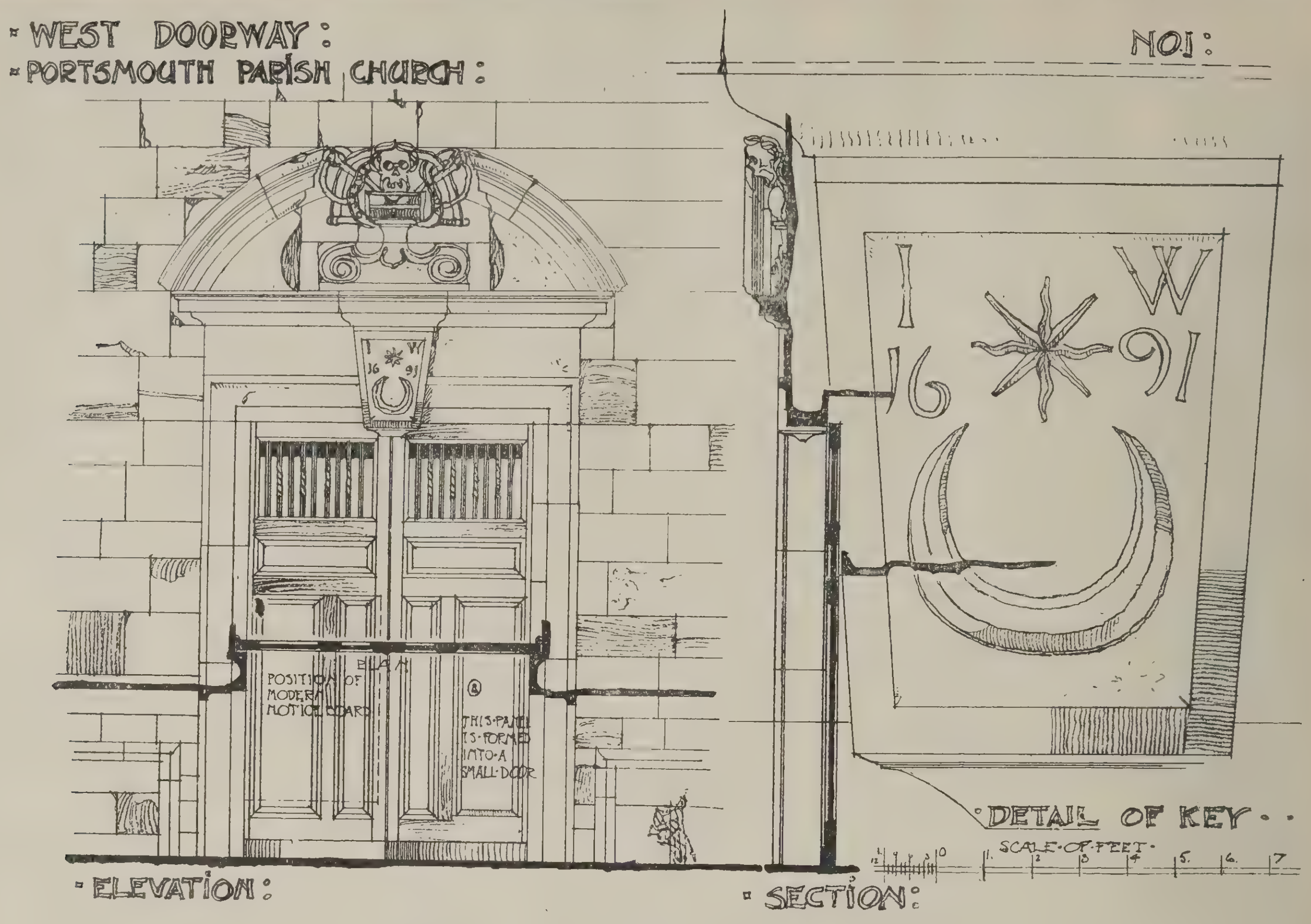
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# Bricks and Mortar.

**Aphorism for the Week.**

*The history of architecture in the Middle Ages is no more than the history of the struggle of architects against the thrust and weight of vaulting.*—Quicherat.

**Our Plates.** Mr. T. M. Rooke's drawing is referred to on p. 273 of this issue.—The exterior of the new exchange building at Amsterdam was illustrated in The Builders' Journal for September 2nd. We can only repeat what we then said, that it is a very notable design.

**Portsmouth Church.** The parish church of Portsmouth is undergoing some much-needed restoration. In 1683 a brief was issued to raise funds for its restoration, which consisted in dismantling an Early English nave and central tower and replacing them with a classical nave and a tower at the west end, so that the chancel is Early English and the west portion Italian. Unfortunately the original builders of the church were negligent in their foundation work. Instead of going 6ft. deeper and reaching the hard gravel, they raised their piers and walls on rough stones thrown into a narrow trench. The effects of this have been increased by the digging of graves and vaults, and the chancel would have fallen in but for the present effort. The church has been closed for a year, and, under the direction of Mr. T. G. Jackson, R.A., the chancel has been cleansed and its structure made secure at the expense of Winchester College, which holds the advowson of the benefice. But the rest of the church needs repairs of the same nature, and the chancel must be floored and seated; it is also proposed to add a choir vestry at the west end, for which purpose a sum of £6,000 is now being raised. The drawing of the west doorway of the church reproduced above, by Mr. Alfred C. Bossom, is of special interest just now.

**The Oxford Colleges.** A great alteration has been carried out at Magdalen College, Oxford, in the construction of a new roof to the hall. Wyatt's plaster vault is now a thing of the past. On its removal two most interesting discoveries were made. The first was a fine three-light tracery window at the east end of the hall, partly blocked by the old vault, walled up and plastered over. The second was that of the marks on the end walls of the wood tracery between the tie-beams, and the arches below them, of the original roof. These traces corresponded nearly with the roof shown in an old print of the original chapel roof. The window has been opened up and restored and glazed with heraldic glass. The design of the new roof was slightly modified by Mr. Bodley, the architect, from his original plan, in consequence of the discovery, and very nearly resembles that of the original. The pitch of the roof externally has been lowered, the old slate roof, visible from Magdalen Bridge, being removed, and the embrasures of the battlements lowered to the old design. University College has also been at work on its hall, 20ft. having been added to the length. It was known that a fine hammer-beam roof existed above the plaster ceiling, so the new addition has been roofed in accordance with the old design. The original roof, however, proved to be in too bad a state to open up, and at present the end of the hall has its new roof at the full height, while the old plaster ceiling remains. The Hertford College new buildings are now complete, and were opened at the beginning of term. It is intended eventually to open up and restore the Chapel of Our Lady on the walls, and connect it with the new buildings, carefully preserving the beautiful little doorway and as much of the old building as possible. A bridge over the road to unite the new and old buildings is also proposed by the college. The balustrade crowning the Old Ashmolean Museum has been renewed. The new Fellows' houses belonging to Merton College, opposite the Examination Schools, are complete, and re-facing and alterations have been done to the Warden's house at New College.

**Photo Copies of Drawings.** In the paper on "Photography for Architects" which he read before the Architectural Association on December 4th, Mr. Francis R. Taylor says that owing to the tendency of the paper to fall to pieces in time, the Authorities only accept photographic reproductions on linen. He also suggests that the makers of the various papers should consider the best means of surmounting this difficulty. Mr. John B. Thorp, of the London Drawing and Tracing Office, 98, Gray's Inn Road, writes in reference to this: "The processes specially referred to by Mr. Taylor, namely, the ferro-prussiate, gallic and sepia processes, are fast becoming obsolete. For some considerable time now the profession has had placed before it several black-and-white processes which claim to be permanent. I myself have been, and am still, supplying to architects and engineers, permanent black-line photo-copies, not only on Whatman paper, but also on transparent tracing cloth; which, from the nature and finish of the process (a combination of lithography and photography) can hardly be distinguished from the original drawings or tracings. These are absolutely permanent, as no chemicals whatsoever (the true source of the virulent tendency referred to) are used on the finished copies." The sample copies which Mr. Thorp sends, showing elevations in black line and plans coloured, are certainly excellent: no one would suppose they were lithographs.

**Waltham Abbey Church.** It is stated that the Abbey Church of the Holy Cross at Waltham—"Waltham Abbey," as it is generally known—is in urgent need of preservation works. The original church was cruciform, with transepts and a central tower at the intersection, but nothing now remains except the nave; the choir and transepts perished first at the dissolution of the monasteries under Henry VIII., and the central tower fell down in the middle of the sixteenth century, when the present tower at the west end of the nave was built. The nave was restored by William Burges in 1860, and the paintings on the roof were executed by his pupil, E. J. Poynter, now the president of the Royal Academy. The western tower, although a comparatively modern addition to the church, has undoubtedly been the means of saving the rest of it from falling to the ground, having served as a buttress for nearly 350 years; for after the destruction of the eastern portion of the original church the nave gave a lurch to the west. The tower was re-faced in 1798 with stone which was not adapted for outside work, the result being that the re-facing is now in a dangerous condition, and at any time masses of stone might fall.

## DRAWINGS OF ARCHITECTURE.

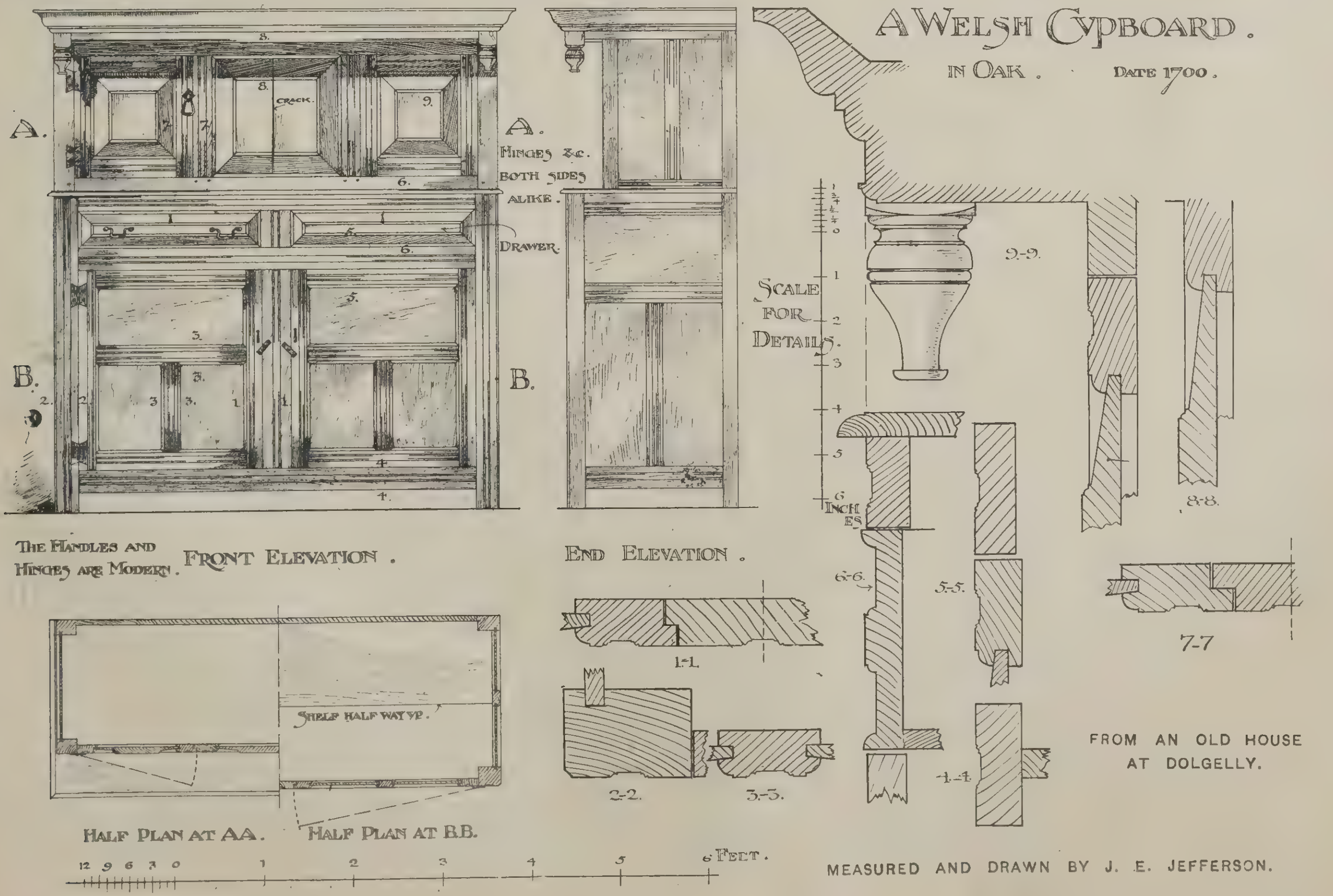
This week we give examples by Prof. Beresford Pite and Mr. T. M Rooke. It is only in accordance with what we should expect that Professor Pite should exhibit in his drawing the bold and original character of his designs. The drawing of the ruins of Baalbek reproduced on p. 271 of this issue is essentially individual in treatment, and we can point to no other draughtsman whose work would be similar. It is a very powerful drawing and exhibits great skill with the pen.

Mr. T. M. Rooke holds the proud position of having been one of Ruskin's favoured few. That he was deservedly so, the drawing of the old-world street at Loches proves. This drawing is a most beautiful one; and though we are unable to give the colour in the original, still in black-and-white it charms the eye and wins admiration from all who have any perception of good draughtsmanship, artistic treatment and well-balanced composition.

## Law Cases.

**An Action in respect of Palmer's Travelling Cradles.** — The Workmen's Compensation case of *McCabe and others* v. *Coplin & Palmer's Travelling Cradle, Ltd.*, was heard in the Court of Appeal last Wednesday. The facts were as follows:—In 1902 Jopling, a builder, entered into a contract to paint the outside of two houses for £159, and he made arrangements with Palmer's Company for the supply, fixing and removal of four travelling cradles for £23. About a month after the painting work had been completed McCabe was engaged in lowering one of the cradles for the purpose of removing it, when he fell to the ground and was killed. At the time of the accident there were five men engaged in removing the structures, ropes and cradles. The judge of the City of London Court held that the house was being repaired by means of a scaffolding, and that the removal of the scaffolding was a substantial part of the process of repairing; that this part had been undertaken by Palmer's Company, and that they were "undertakers" within the meaning of the Act. He made an award of compensation as against Joplin as undertaker (it being admitted that he was an undertaker) under section 4 of the Act, and held that Joplin was entitled to be indemnified by Palmer's Company. The latter appealed. The Court dismissed the appeal. The Master of the Rolls said the cradles were suspended from poles fixed to the roof, and were "scaffolding" within the Act. It was contended on behalf of Palmer's Company that the removal of the cradles and poles was no part of the process of repairing—that was, the process of painting—and that therefore they were not liable to indemnify Jopling. But the Master of the Rolls held that it was impossible to say this work of Palmer's Company was not part of the process of repair when it formed an essential part of the process of repair, and which, if done by Joplin himself, would undoubtedly have been part of that process.

**Repairs to Water-Closets: Important Case.** —The case of the *Metropolitan Industrial Dwellings Co.* v. *Long* came before the King's Bench Division of the High Court of Justice on December 11th. This was a case stated by Mr. Chapman, magistrate at Southwark, in the matter of thirty-three summonses taken out on behalf of the Southwark Borough Council against the appellants as owners of Ponsonby Buildings. These buildings were erected before the confirmation of the drainage by-laws of 1901, made under section 202 of the Metropolis Management Act, 1855. In December, 1902, owing to the substitution of an iron pipe or drain for one of ordinary Doulton ware, it was found necessary to put new traps and pans connected with thirty-three water-closets in the buildings, as the old traps and pans were broken during the progress of the work, but there was no change in the upright soil pipe. The appellants were then informed by the local authority that the traps must be fitted with anti-syphonage pipes, in accordance with by-law 17 of the L.C.C. drainage by-laws, because by by-law 21 the by-laws were made applicable to new work in old buildings as far as practicable. The appellants called evidence that the soil pipes were of such dimension, namely, 5in. in diameter, that the evils of syphonage, to prevent which these by-laws had been made, could not possibly occur, and that the expense which would be entailed by compliance with the by-law was so great as to make the application impracticable. The Lord Chief Justice, in giving judgment, said the magis



A WELSH CUPBOARD. IN OAK. DATE 1700.

FROM AN OLD HOUSE AT DOLGELLY.

MEASURED AND DRAWN BY J. E. JEFFERSON.

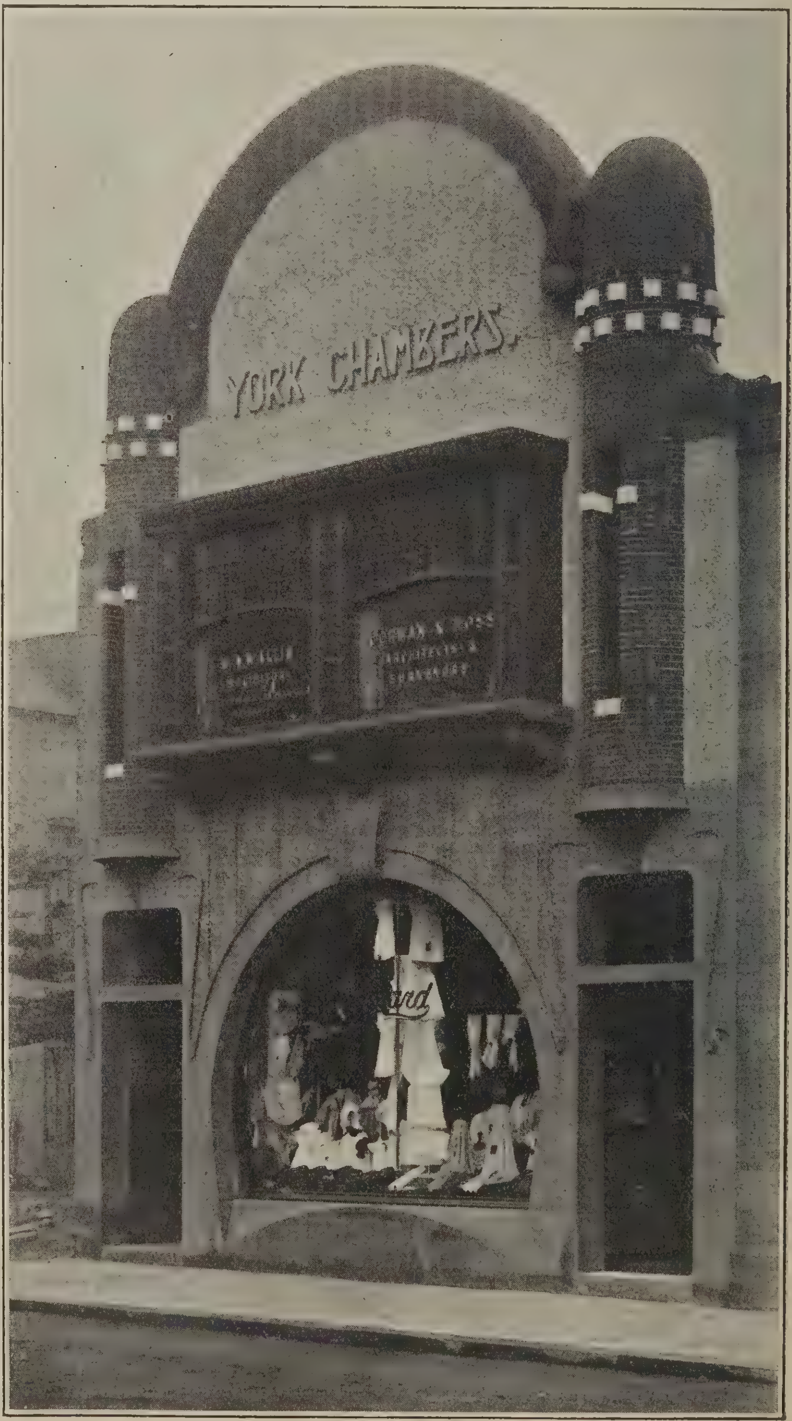
trate found in favour of the appellants that there was very little chance of syphonage or regurgitation, but that was *nil ad rem*. The only thing he had to consider was whether there was a breach of the by-laws as properly construed. His Lordship considered these by-laws were in no sense *ultra vires*. By-law 21 applied them to old buildings, and must be read most strongly against the person who was doing the work. Was it right to say that the work contemplated by that by-law must be the construction of a water-closet under by-law 17? That was going too far. But if the local authority meant to say that putting in a new trap was the construction of a water-closet, or that the doing of repairs which had been rendered necessary by some part of the closet being broken when some other work was being done, brought by-law 17 into operation, they ought to have said so in plain words. By-law 21 did not inform a person that if he repaired a trap or pan he was constructing a water-closet. Notwithstanding the difficulties arising in this case, he had come to the conclusion that the by-law was not sufficient to make that which was done the constructing of a water-closet within by-law 17, and these penalties ought not to be enforced. The other learned judges delivered judgment to the same effect, and the appeal was accordingly allowed.

**Building Frontages.**—James Rossdale was summoned at the Marylebone Police Court recently for erecting certain buildings at 60 and 62, Westbourne Grove with only 2ft. 6in. of forecourt added to the public way, instead of 6ft. as settled. The magistrate ordered the building to be pulled down. He also fined the defendant 40s. with £2 2s. costs.

**Workmen's Compensation: A Bricklayer's Dinner Hour.**—The case of *Blovelt* v. *Sawyer* was heard before the Court of Appeal on December 12th. On October 15th, 1902, the appellant, a bricklayer in the employment of the respondent, was engaged on the building of a house more than 30ft. in height. In the morning he was building a wall. During the dinner hour, from 12 to 1, the wall fell on him and he was seriously injured. The county-court judge was of opinion that, as the applicant had sat down for the purpose of eating his dinner when the accident happened, the accident did not arise out of and in the course of his employment, and he therefore dismissed the application for compensation. The applicant appealed. The Court allowed the appeal and remitted the case to the county-court judge. The Master of the Rolls said it seemed to him that *prima facie* the applicant was in the employment of the respondent during the whole of each working day from the time when he went to his work to the time when he came away, and just as much so during the dinner hour as during any other part of the day. It had, however, been stated that the applicant was paid by the hour, and that the dinner hour was excluded in the computation: yet the Master of the Rolls thought the Court ought to take a broad view and treat the dinner hour as part of the time of employment. For the master to allow his workmen to have their dinner on the premises might very well be a matter of mutual convenience. He could not say as a matter of law that the applicant during the dinner hour ceased to be in the employment of the respondent. The appeal would therefore be allowed. The Lords Justices delivered judgment to the same effect.

**What a Warehouse is.**—The case of *Green* v. *Britten & Gilson* was heard last week in the Court of Appeal. It arose out of an accident to the applicant while unloading some heavy cases of glass at two railway arches in Union Street, Southwark, occupied as store-places by the respondents. The applicant took proceedings under the Workmen's Compensation Act, 1897, contending that the arch was a "warehouse," and therefore a "factory" within the meaning of section 7 of the Act. The county-court judge held that the arch was only used as ancillary to the business carried on in Union Street, and was not a "warehouse" within the meaning of the Act. He accordingly dismissed the application for compensation. The applicant appealed. The Court allowed the appeal. The Master of the Rolls said that orders for goods were given by customers either in the shop or to travellers, and the goods were supplied from the store in these arches. So far as the wholesale trade was concerned, the store fulfilled all the purposes of a warehouse. A place which was merely ancillary to a retail business was very different from a place which was ancillary to a wholesale business. What was this store ancillary to? If it was ancillary to a wholesale business it was a warehouse. If it was ancillary to a retail business it was not a warehouse. It was a mixed question of fact and law, and it seemed to him that the county-court judge had misdirected himself in point of law. The business carried on by the respondents was in the main a wholesale business. Lord Justice Mathew was of the same opinion. Lord Justice Cozens-Hardy said that he had had, and still felt, some doubt in this case, but it was not strong enough to make him dissent from the conclusion arrived at by the Master of the Rolls and Lord Justice Mathew.

**Business Premises, Long Eaton.**—The lower part of the building is of old red sandstone from Corsehill Quarry, Dumfriesshire. The bricks in the turrets are rubbers from Messrs. T. Lawrence & Son, Bracknell, Berks. The gable is treated in rough-cast, and the letters are of stone, gilded.



BUSINESS PREMISES, LONG EATON. GORMAN AND ROSS, ARCHITECTS.

# Correspondence.

### "Scientific Masonry."

*To the Editor of* The Builders' Journal.

Sir,—I assume the correspondence on this subject is now at an end. I will therefore make a few short remarks in reply. To Mr. Barham I replied in your issues for November 11th and 25th, and with the drawing here reproduced all his objections should be satisfied. Further, I must tell him that the properties of the ellipse illustrated in your issue for October 28th are exactly what I claimed them to be on the diagram. Mr. Barham says my articles should be correct and scientific in more than title: well, the definition of the word "scientific" is—knowledge reduced to method; and, whatever may be said to the contrary, I claim to have reduced scientific knowledge to a very simple method, by V V W. I could not advise any readers to waste their employers' time in such a roundabout way to find approximate normals by the various lines that I show on my second diagram.

"Having a deep face moulding." Technically "deep" is the wrong word to use. I should prefer "wide face moulding," for in mason's language a stone is said to have length, depth and height. "Archivolt" is the correct term.

I do not think I need make any comment on Mr. Hubert Hulme's statement, as it is not worth notice.

As to Mr. Cox, I would refer him to my replies to Mr. Barham.

To Mr. Walter Atkins I would say: "Why, perpendicular distance, of course." There are many examples in all parts of the country of elliptical brick arches constructed by our forefathers; these are parallel in the direction of the rays of the trammel. Who are we to say they are wrong? Does geometry lay down hard-and-fast principles? I think not: therefore I prefer to advise the use of simple geometrical problems, rather than those implied in the letters that have appeared from these critical geometricians.

May I ask "practical masons" if they think it would be considered good work to always insist on normals?—as, for instance, in the springers of a Lierne vault and in the lower course of a cupola without abutments. And was the late Mr. J. L. Pearson, R.A., wrong in always having his bed joints horizontal in a spire, and not normal to the face?

Theoretical and practical men will most effectually promote their mutual interests by not affecting to despise each other, but by blending their efforts.

Other people's blunders either educate us or make us more conceited.—Yours truly,

JOHN WORNELL.

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## SCIENTIFIC MASONRY—V.

*(Continued from p. 219, No. 461.)*

### An Elliptical Arch.

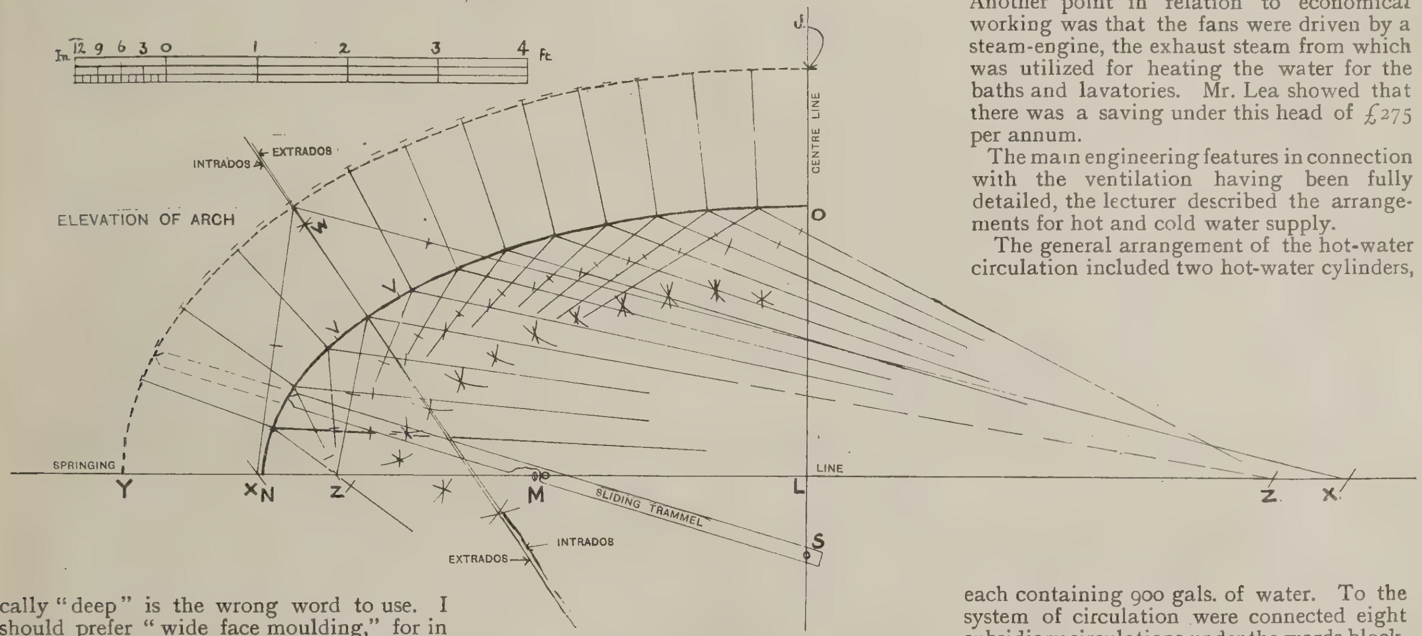
### By JOHN WORNELL.

I NOW show this arch equal on the face at the approximate normals, and to prove the correctness of the simple and ready method I advocate of producing joint lines I show the approximate normals produced by bisecting the foci to intrados and foci to extrados, and the simple bisect V V W shown originally. The reader can now judge what amount of error I advise him to pursue.

To find the foci to intrados take L N as radius, O as centre, and produce arcs Z Z on the springing-line.

To find the foci to extrados take L Y as radius, J as centre, and produce arcs X X on the springing-line.

The joint shown at W clearly demonstrates that the two normals are not necessarily the same.



The extrados drawn parallel to the intrados by the sliding trammel is shown with the full dotted curve; the outer dotted curve shows the arch equal at the approximate normals. It is impossible to draw this curve except by segments, which method I do not advocate; but having found all the points in the new curve, take a flexible rule, which we will assume is ¼in. thick, drive pins (French nails will do) at all the points but ¼in. inwards from same, equal to thickness of rule; bend rule on face of same and mark new curve with pencil; the face lines for moulding can be marked with the mason's trammel from the soffit.

All the approximate normals are drawn from foci to intrados, except that at W, which I show as an illustration of a simple method to economize time, and arrive at practically the same result, being the mean between the two.

*(To be continued.)*

**Wells Cathedral.**—Referring to the paragraph on p. 268 of our last issue, Messrs. James Powell & Sons, of the Whitefriars Glass Works, state that the memorial in the north transept to the men of Somerset who fell in the South African war consists of six two-light windows with inscription, and cost £1,200; while that in the south transept is of three two-light windows and cost £400.

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## THE VICTORIA HOSPITAL, BELFAST.

IN the paper on the "Engineering Work of the Royal Victoria Hospital, Belfast," which he read before the last meeting of the R.I.B.A., following Mr. Henman's paper, Mr. Henry Lea, M.I.C.E., said the main air-duct at the end nearest to the fan chambers had a height of 20ft. and a width of 9ft. The full width was preserved to the far end of the wards block, a distance of 443ft., but the bottom sloped upwards, so that the height was diminished to 6ft. at the far end. The total cubical capacity of the hospital buildings ventilated on the plenum system was 703,000 cub. ft. With seven changes of atmosphere per hour in the winter the velocity of the air entering the main duct was 7·06ft. per second, and with ten changes per hour in the summer the velocity was 10·85ft. per second. The proportions of the branch ducts and of the vertical air-flues were based upon similar liberal lines, as were also the airways through the fan chambers and the water-screens; this accounted for the reduction of power for working the system. Another point in relation to economical working was that the fans were driven by a steam-engine, the exhaust steam from which was utilized for heating the water for the baths and lavatories. Mr. Lea showed that there was a saving under this head of £275 per annum.

The main engineering features in connection with the ventilation having been fully detailed, the lecturer described the arrangements for hot and cold water supply.

The general arrangement of the hot-water circulation included two hot-water cylinders, each containing 900 gals. of water. To the system of circulation were connected eight subsidiary circulations under the wards block, for the purpose of supplying the baths and lavatories in that block. All the hot-water mains and the branch circulations were covered with non-conducting composition. The effect of the rotary pump was such that the hot water was caused to circulate through the whole system about once every fifteen minutes, which ensured evenness of temperature.

The system of cold-water pipes followed substantially the course of the hot-water pipes, with the exception that no circulation arrangements were provided. Wherever the cold-water mains and pipes were exposed to cold air they were covered with non-conducting composition to protect them from frost.

Electricity for lighting was supplied from the town mains. The system of wiring was that which was now well known and generally used, but which the author believed he was the first to use, namely, placing a suitable number of fuse-boxes about the building; using the same sized sub-mains throughout for supplying the fuse-boxes; using the same sized fuses in all the fuse-boxes; placing not more than five 60-watt lamps on each fuse for 100 volts, or eight lamps on each fuse for 220 volts; and using the same sized lamp-leads throughout the whole building. The total number of 16 c.p. lamps, or the equivalent, installed in the establishment was about 1,100.

## ARCHITECTURAL ASSOCIATION.

### Mr. Bankart on Plasterwork.

A MEETING of the Architectural Association was held on Friday evening at 9, Conduit Street, W., Mr. Arnold Mitchell occupying the chair.

The following were elected members of the Association :—Messrs. A. W. Wilson, C. W. Berry, H. J. West, H. Bromley and A. Welford.

The following additional donations to the New Premises Fund were announced :—

| | £ | s. | d. |
|---|---|---|---|
| Farmer & Brindley - - - - | 10 | 10 | 0 |
| T. E. Pryce - - - - - | 10 | 10 | 0 |
| E. P. Howard - - - - - | 1 | 1 | 0 |

A paper on "Old Stucco-Duro and Plasterwork with reference to Modern Use and Application" was then read by Mr. George P. Bankart, of which the following is a summary :—

### Egyptians, Greeks and Romans.

The Egyptians covered their buildings with a slight coating of stucco to conceal the seams of the stones and receive the painted decoration. The question of the use of stucco among the Greeks opens up a rather extensive subject, and one about which nothing consecutive or comprehensive has been written. The almost universal use of stucco in Greece is very generally overlooked.

In early times it was usual to use inferior materials for building—mud bricks or rough kinds of stone—and to cover the surface, wherever visible, with a thin coating of stucco, which was frequently ornamented with fresco-painted decorations or other motives.

This applies to all architectural members of early temples before the use of marble became prevalent, and even after, when marble could not be easily obtained for houses and other similar buildings: it probably remained the custom of all times, as the walls were mostly made of unbaked brick.

The quality of the early Greek stucco is wonderfully fine. In early times, as far as I know, the stucco was always a mere thin coat, covering exactly the forms below; but in later Greek times examples of capitals of columns, bulls' heads, &c., are known to have been modelled or cast with it.

The Byzantine Greeks generally used plaster in cornices and enrichments, also in their window framings. Their mosaics were also bedded in a plaster composition.

Viollet-le-Duc tells us that the Romans used stucco very frequently both for public monuments and private dwellings; and its use was passed down to the Gauls, whose work, however, had not the beautiful polish that marks the stucco of Grecian antiquity and the best times of the Roman epoch, nor their solidity.

Consequently the works of the Gauls have rarely been preserved, and their absence is too apt to make us believe that Carlovingian buildings, for instance, allowed the rudely-finished courses to be seen both inside and outside. But, far from this, these buildings, though rude and barbarous, were covered with coatings and paintings both in the interior and outside, and these coatings, sometimes decorated with engravings ("sgraffitto") and ornaments in slight relief, are real stucco-work.

Formerly, the walls of churches were adorned with stucco-work, engraved and painted.

Some Carlovingian buildings show traces of stucco-work on the vaults, and even on the capitals. The large capitals of the old narthex of St. Rémi of Reims, those of the crypt of St. Laurent of Grenoble, and even of the capitals of the Apside of the Church of Issoire are simply baskets of stone covered with figures or ornaments in stucco. At a later period in France, stucco work was nothing but a delicate application of ornaments, trellis and flowered chequer-work on even surfaces to soften the bareness.

The foregoing remarks are sufficient to show that the properties of stucco and plaster were well known in very ancient times; but whereas a full knowledge of the capabilities of stucco was arrived at very early, that of plaster did not reveal itself until comparatively modern times.

### Old Stucco.

Stucco has for its base carbonate of lime—generally the burnt limestone or chalk of the rocks and hills. The stucco in the days of Vitruvius was far more carefully compounded than now; the lime was most carefully chosen, burnt with wood, and subjected to a very gradual process of slaking for a long time before being used (generally for about two years). The first coat was of rough stuff, with broken marble, and the remainder of finer stuff; whilst the finishing coat was of very fine marble dust, which, when dry, was polished with marble dust and chalk.

The more recent work was stone-coloured from the use of powdered travertine, whitened with lead ground in water.

With such a medium the modelling was done direct, as it set very slowly and was smooth and hard. It was absolutely impervious to wet or climatic variations, and "weathered" better than marble.

As the Romans carried off the Greek treasures for the adornment of Rome, undoubtedly they carried with them the art of the decorative stucco-worker. A glance at the Roman work shows a strong Greek influence.

It is impossible to overrate the value of the lesson this early work teaches, combining as it does purity of line and mastery of execution, no matter how simple.

### From Raphael to Henry VIII.

With the barbarism following the decadence of Rome, stucco passed into obscurity, to be resurrected again in the sixteenth century through investigations and researches organized by Cardinal Giovanni de Médici in seeking for sculpture of Classic times.

Raphael and a number of his fellow-workers succeeded in reviving the art of stucco-work in Italy, doing much work at the Vatican and other notable buildings. It then passed to Mantua, Venice, and other Italian cities, and was carried from there to France (Fontainebleau and Versailles, &c.) at the time of François I., and thence to England by Henry VIII. in jealousy of the French king. Henry introduced stucco extensively into the palace of Nonesuch, which stood on the hill between Epsom and Cheam and within reach of Hampton Court.

The introduction of Italian workmanship into England was followed by the raising of a school of English craftsmanship which rapidly spread the art throughout the country. But stucco-duro gradually gave way to the employment of coarser stuff or "pargé" work, which rather later became the medium of the native workmen.

Time went on, and a cheaper and commoner material brought "degeneration" with it—of a kind. This coarser stuff was modelled and stamped, and was known as "pargeting"; it consisted of the ordinary lime, hair and sand, and was applied to any part of the structure, internal and external. To witness—Wyvenhoe, Clare and everywhere. Then followed the wave of

### Plasterwork

particularly our own :—

1. The arrangement of panelling and radiating ribs based on the fan tracery of stone.

2. A pendentive system superseded and outlived the above, as at Audley End, in the "Fish Room."

3. Modelled foliage sometimes replaced the radial ribs, giving the effect of Gothic diaper.

4. Pendentive system superseded by geometric arrangement of ribs—not limited to straight lines, ceilings abounding in interlacing lozenges, quatrefoils, circles, ovals, and other forms, spaces between ribs being filled with armorial bearings and personal devices and other emblematical forms; figures occurring very seldom, unless of armorial character.

5. Size of sub-division gradually expanded until

6. Ceiling area became divided into four parts, large or small, one quarter bearing the design.

This developed into the Jacobean system of interlacing strapwork and patterns.

Earlier ceilings had plain moulded ribs—like groin ribs. As power of execution grew flat surfaces became introduced between two sets of mouldings, with improved decorations done off a revolving stamp.

Queen Bess's time had moulded ribs with sprays or sprigs of flowers or medallions of floral ornament, these being cast or run *in situ*.

Sprays and medallions in early days were nearly always modelled by hand. Afterwards stamped; later still, cast in plaster-of-Paris.

[Mr. Bankart here proceeded to follow the history of the art down to the beginning of the nineteenth century, explaining its vicissitudes—how design improved with the Restoration, how the influence of Louis XIV.'s day exerted itself, modelling becoming more minute, detail being the chief thought, and the general conception discounted; and then the changes that took place under Gibbs and Chambers; and finally the compo-work of the Brothers Adam.]

### The Work of the Craft Days.

Examine a piece of old plaster. It is coarse and rough, and contains little bits of gravel and other inequalities which modern architects would condemn without doubt. Where should we draw the line?

The old ceilings were not die-level and polished; they were full of delightful but very slight undulations; the ribs and strapwork were not painfully exact, as ours are.

The old work has not that strain and mental limit naturally associated with office confinement and the ever continual abuse of drawing as an art instead of a means to an end.

Hand and eye judgment rather than exact measurements was evident everywhere.

Moulds were carried from one job to another, and frequently made to fit in as they would, or were altered to suit circumstances.

The workmen had their moulds, tools and traditions—perhaps some rough plan for guidance, instead of a fussy and pretty drawing of what it would not and could not look like—to tempt and deceive a client.

Think of the many quaint patterns done on the outsides of buildings (cottages and houses) by the common village plasterer or mason, with the pointed "fan" of sticks, still used by our own plasterers for "pricking-up," as they term it. Think of the quaint patterns done with the end of the trowel in various ways. These patterns are confined to the particular district radius in which the man lived and worked. Some of this work is suggestive of natural form, and it is here interesting to note how the influence of Nature affected this art when first introduced into England.

At that time the stucco-worker undoubtedly went to Nature for inspiration, as is evidenced by the friezes at Hardwick Hall, St. Michael's Mount and other places.

### The Plasterers' Craft

did not share the fate of the other crafts, whose traditions were paralysed and crushed out at the time of the great upheaval in Henry the Eighth's reign. On the other hand, it was inspired with a new use, a new life, a new purpose.

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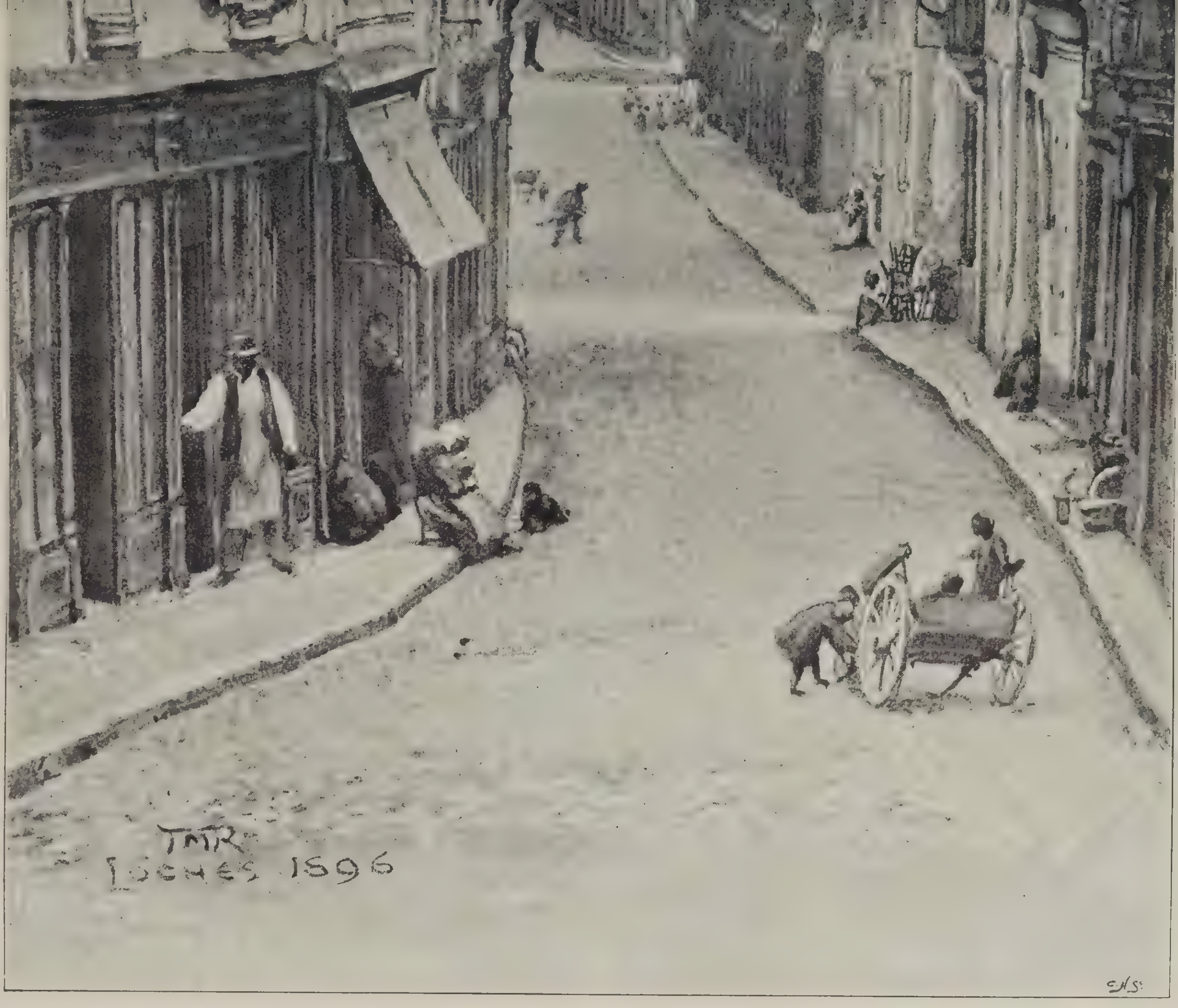
*Wednesday*, *December 23rd*, 1903.



Drawings of Architecture: The Rue Picois and Porte Picois, Loches, France. By T. M. Rooke.

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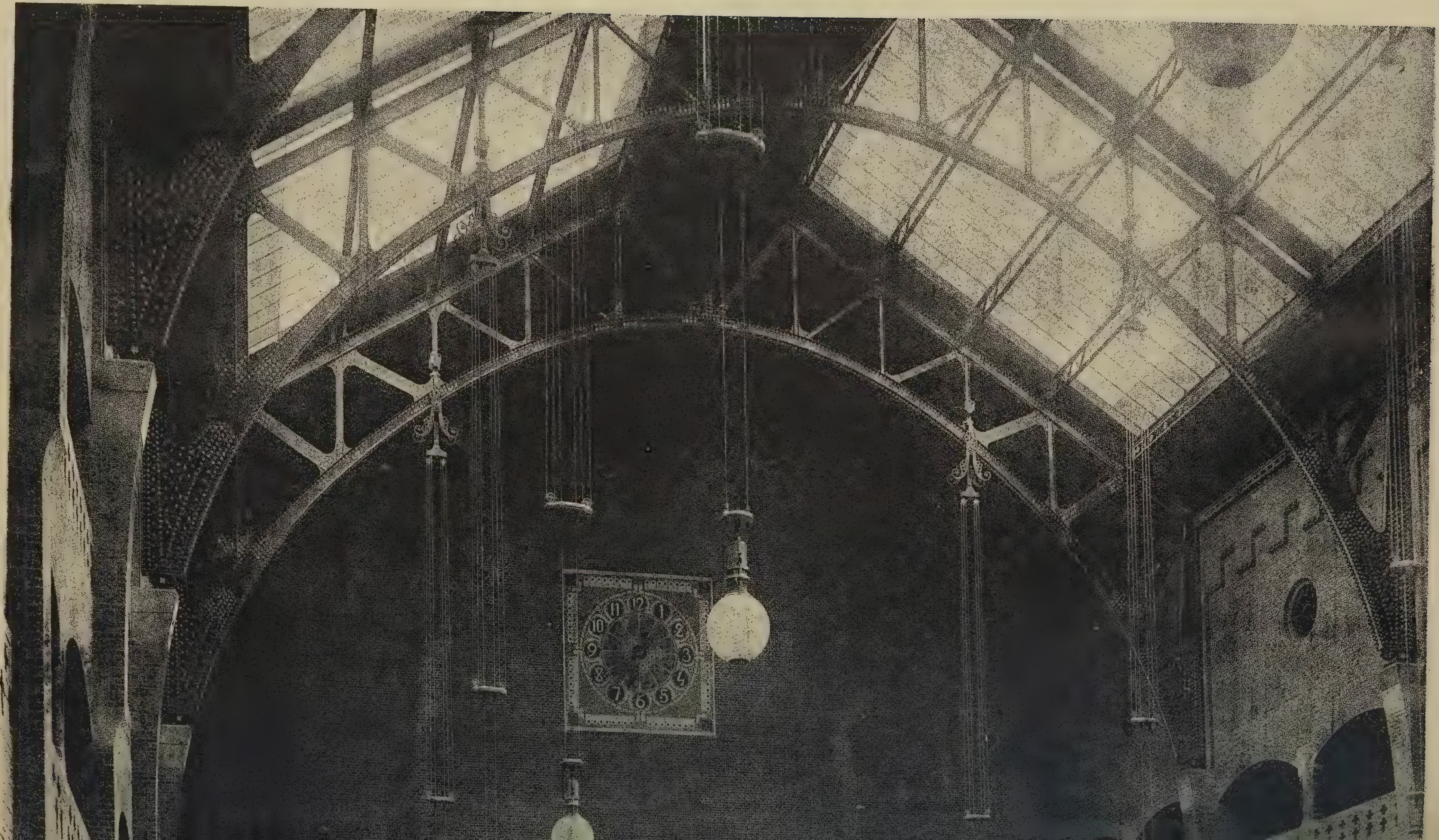
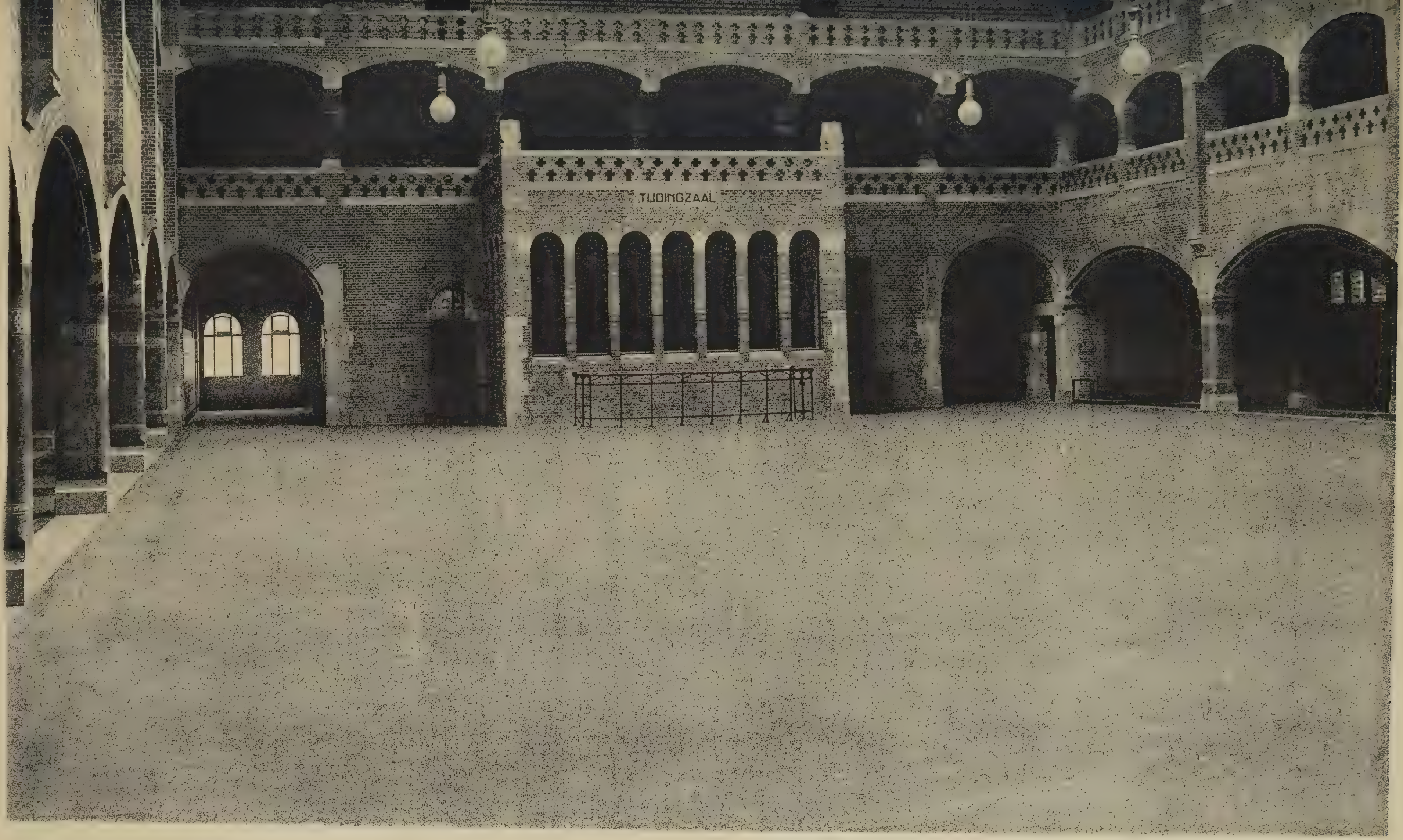
THE BUILDERS' JOURNAL AND ARCHITECTURAL RECORD,
*Wednesday, December 23rd*, 1903.





"INK-PHOTO." R. J. EVERETT & SONS, 56 LUDGATE HILL, LONDON, E.C.

NEW EXCHANGE BUILDING AT AMSTERDAM. H. P. BERLAGE, ARCHITECT.

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Take, for instance, the Long Gallery ceiling at Knowle, Kent, in which are combined the vine, rose, pink, honeysuckle, columbine, marigold, lily, &c. These flowers occupy spaces formed by waving bands of enrichment, and are modelled quite as admirably as such a dull material as plaster can or ought to be modelled. It is very simple, broad, big, straightforward work, free in every way, has little variety of relief, and the line curvature gentle and refined, although vigorous. There are no sharp curves, no under-cuttings, or "sparkle" of effect that might be appropriate and desirable in a harder material, such as stucco, or wood or marble, but it has a dulness and a softness quite natural and charming in such a medium.

### Modern Work.

The contrast between the past and the present is sufficiently palpable. Being myself an architect as well as a craftsman, I am in a position to realize both sides of the question. We cannot, if we would, get away from the employment of plaster as a material. We are therefore confronted with the question of what can or should or what cannot or should not be done with plasterwork.

"Plastering," says Professor Lethaby, "once the art of the stucco-worker, is now barely represented in the 'three-coat work' of specifications. How should it be otherwise, when we think?

"Would it not be irony, on the face of it, to put in the bill of quantities 'supply and fix one work of art'?

"The crafts of the mason, the carpenter, the plasterer, are even now being finally destroyed by a system in which design is divorced from work, the present system in which the designer has no hands to execute and the worker no head to think. These last remnants of long-gathered traditions are being forgotten because they are no longer required by the paper architect."

When the arts of building are all of them killed out finally, and the memory of their doing dead, who shall build them up again? Will being examined in architectural history, practising a mechanical system of drawing, and acquiring the completest equipment of all the routine of the profession give back to us the skill and delight of the craftsman?

Such a sympathetic and sensitive medium as plaster can be used rightly or wrongly. We are all familiar with the modern "sugar-confectionery" of the plasterer. At the present day we have the same materials open to us as before, namely, stucco-duro — ordinary lime and sand plaster—and plaster-of-Paris, not to mention cements of various kinds.

### The Controlling Elements

are, first of all, cost, which is naturally a wise and binding consideration.

Then, clients' idiosyncrasies, architects' ideals, and craftsmen's individualities—sometimes all combined!

The craftsman's sympathetic handling is the most hopeful means of success, where such individuality is strong, unaffected and reliable. Everything depends on his knowledge of and sympathy with architecture; his knowledge of past methods and forms; his knowledge of his material, its capabilities and limitations; his power of imagination; his grasp of the teaching of Nature; his gift of selection, and of the power of expressing himself; and his constructive instinct. Granted a full share of these qualifications, there is little to fear so far as he is allowed a reasonable amount of freedom. And here lies the hinge of the matter—a subtle hinge, to be opened and closed at will by the architect and by the client.

I believe you wish me to express my opinion as to what should be done.

Putting "stucco-duro" aside as undoubtedly the finest and most permanent, though more expensive, method of expression, let us resort to less expensive ones.

### Modelling and Casting.

We next have a system of modelling in clay and casting in plaster-of-Paris (sulphate of lime) from plaster moulds, as the case may be—either solid or fibrous. Here the craftsman has a fair chance of various nice treatments in the placing of his enrichment, and the relief of his enrichment, according to the funds at his disposal and the liberty allowed (either of restraint or otherwise). In such manner beams may be clothed, flat spaces treated as flat spaces, with flat or protecting bands of soft enrichment in endless ways.

Before referring to a still simpler and important treatment open to development, I would desire a few words about deeply under-cut enrichment cast in plaster-of-Paris from gelatine moulds. I do not consider this type of work as one to be encouraged. Beautiful as it is in stucco—which is a very hard material as well as a subtle one, allowing of crispness, thinness, deep-modelling and under-cut relief, with beauty of texture and every other possibility—it is not a legitimate one for a soft material that is easily rubbed and broken, and will not take sharpness of treatment without injury. I admit the beauty of this type of work; but it is illegitimate, too easily injured, and unsuitable to the material.

### Fibrous Plaster,

although a modern process in this country, is by no means a modern process in itself, and many architects and craftsmen are prejudiced against it as being (1) not strictly a solid plaster process; and (2), as some imagine, not a permanent process.

The first objection is a matter open to discussion for and against. The second objection will hardly hold good, since the process appears to date back to the Egyptian pyramids, when the mummies were wrapped up in canvas dipped in burnt gypsum.

The process was introduced into England in 1859-60 from France, by De Sachy. His system was to dip small pieces of canvas about 4in. square into the plaster-of-Paris, and dab them all over the mould and over each other. He employed girls in this work, but was not successful in making much of it then.

In 1861 De Sachy sold the patent to Messrs. George Jackson & Sons, with Mr. McDonald as foreman and instructor. But at that time little headway was made with it, and the patent was not renewed. Smaller firms experimented with it from time to time, until it became more constructive and improved.

The French used tow in the loose form, instead of the woven and open-sheet form as at the present time, with wood laths in the form of "strutting." A well-known artist told me that he disliked the system owing to having put up a ceiling thirty years ago which had rotted and had to be taken down again. This was undoubtedly due to the use of boiled plaster instead of baked or burnt plaster. The difference is great, the former being soft and the latter hard.

### Jelly Moulding and Casting.

My objection to this system of work, apart from its cost, is—

First, that it is an apology and cheap substitute for the work of another material—that of "stucco-duro," which would be woven into a gossamer of loveliness.

Second, that in the system of casting from gelatine moulds the work degenerates rapidly from the moment the model leaves the modeller's fingers.

The system is unsatisfactory to begin with. The clay has to be coated with shellac instead of being cast direct from the actual clay surface. In the process of making a plaster case to receive the gelatine a layer of paper has to be laid over the modelling and a thin layer of clay over that, in the process of which the sharp edges and arrises (legitimate in a hard material, which is not afterwards touched) become doubled with the pressure of the clay, and the damage is completed afterwards by pulling the gelatine out of the soft plaster casting, which must perforce suffer where fine edges exist. Apart from this, the gelatine deteriorates with every casting taken, and is greatly affected by the variation of temperature, becomes "woolly," distorted at times, and very difficult to manage, and the work when done is not, and cannot be, that which it is supposed to "ape," and in my opinion can never take the place of stucco.

### Surface.

Then comes the method of dealing with the ordinary lime, sand and hair plaster.

Why should we architects allow this beautiful material to be smoothered and polished up, as we so commonly know it? Why not demand of the plasterer the surface most natural to it—its own granular surface?

I know you are thinking of hygienic considerations! Granted, but these are carried perhaps too far, except in special instances.

A few words about this ordinary material, and what can be done with it in lieu of the cast work. To begin with, it is capable of being stamped and modelled and floated in bands, and "run," and stencilled through perforated wooden templates. The stamping process is exquisite; so is the modelling, when treated with breadth and simplicity. With regard to the "running" of plaster mouldings, we are again to blame in allowing the mechanical die-level sharp-arrised process. It is wrong in principle, whilst we can get interesting work out of simple sections made up of soft, rounded, and wave-like forms, flat, undulating, segmental or subtle lines, natural to the "dragging" of a granular material.

Again, why

### The inevitable and hackneyed moulded cornice

across the angle of wall and ceiling? One way of avoiding the rigidity of this method of "running" where mouldings are desirable is in the working of a short piece in clay which can be slightly worked-on with the fingers and afterwards produced by casting. Of course, it is possible to work the plaster with the fingers, if the lime is old enough and sufficiently deadened, but not under present circumstances of "running" lime as it is required. Otherwise, no man's fingers could stand it!

You will say it will be a long time before we can expect anything different from what we are now getting from the modern journeyman plasterer. Possibly so. Possibly until architects insist on having something less laboured. I believe the kernel of the matter lies in the gulf separating designer and operator. The system is at fault, but time seems to produce reaction upon reaction, and gives some hope.

I believe all the crafts must draw blood from the ranks of architects to bring about a thoroughly healthy condition; and I believe, also, that there will be a time when architects' work will be less minutely detailed in offices than now, and the working-out of things done by sympathetic groups or amalgamations of workers where architects and craftsmen co-operate and work in concord and unity, when every man who transfers his attention to craft work will be regarded as a distinct gain to the art of building, and to (what we now call) the "architectural profession."

### Prime-cost Allowances.

In conclusion, allow me a few words concerning the actual cost of craftwork and architects' estimates, and prime-cost allowances.

Take, for instance, an ordinary enriched plaster cornice.

This moulding can be "run" in the usual way by the non-union plasterer; the enrichment can be bought from the Italian plaster-worker and stuck up in the ordinary way. In this manner no skilled labour is required in the fixing of the work. The modelling can be turned out by any stone-carver modeller who knows little of his craft, accustomed to work at starvation wages, and ignorant of even the right method of handling clay; the casting is done by Italian boys, who work for a mere pittance, and when finished the cornice to the casual observer looks what is called "handsome" by some persons and passes muster with the crowd; and then people say, Why is your work more expensive?

But to put this work by the side of a cornice in which the enrichment is modelled by a man who regards his craft as something more than a means to supply himself and family with bread and cheese—the casting and fixing done by a skilled workman earning the wage he is worth—is a most unfair proceeding, and, if persisted in, means crushing the heart out of good work and good workmen, to the advantage of the inferior in both.

The system of prime-coating superior work at the same rate which architects have been accustomed to allow for inferior work must sooner or later stifle any attempt to elevate craft-workers.

Boiled down, this all means that the architect must educate, educate, educate his clients, and furthermore must insist upon his own views being carried, even when opposed to those of his client: otherwise it means grind, grind, grind on every hand as a matter of principle.

A short discussion followed in which Messrs. E. Guy Dawber, J. D. Crace and Arnold Mitchell took part.

## Keystones.

**The Walker Hospital at Newcastle** is proposed to be extended at a cost of £53,000.

**Mr. R. Weir Schultz** has been appointed architect for the new hall to be erected in connection with the University Settlement at Cardiff.

**Collapse of a Chapel Roof.**—On Wednesday last the roof of the R.C. Chapel at Wellington suddenly collapsed, doing damage estimated at £3,000.

**Electra House, Finsbury Pavement.**—A correspondent points out that this building is of Portland stone with grey granite for the ground storey, not entirely of granite, as stated in our last issue.

**The Williamsburg Bridge,** spanning the East River from Brooklyn to New York, was formally opened last week, after seven years of construction, at a cost of £2,000,000. It is a suspension bridge, having a total length of 7,200ft. and a width of 118ft.; the main span being 1,600ft.

**Dundee Institute of Architecture.**—Last week a paper on the Ordnance Survey was read before this Institute by Mr. Charles Ower, A.M.I.C.E. He said the Survey had always been a part of our military service; its traditions and discipline were military, and it was officered by the Royal Engineers. The headquarters were at Southampton, and the maps there made for the United Kingdom; the Irish maps were engraved and published in Dublin. Foreign experts spoke of the Survey as unique and a model for all civilized nations.—Before the same Institute last week Mr. W. Fleming Wilkie read a paper on "The Celtic Stones of Scotland," in the course of which he said that the most distinctive characteristic of Celtic art was the absence of foliage, while the prevailing characteristic was a decoration of panels or spaces separated from each other by borders, and treated as complete surfaces, the ornamentation including interlaced, fret and spiral work.

**A new Cotton Spinning Mill at Shaw, near Oldham,** to contain 80,000 spindles, is to be built.

**An admirable "Appointments" Pocket-Book for 1904** is being issued by Messrs. Dargue, Griffiths & Co., Ltd., warming, ventilating and lighting engineers, of 37, North John Street and Lord Street, Liverpool.

**New Public Buildings at Kirkcaldy** were opened last week. They face St. Brycedale Avenue, and have cost about £25,000. Mr. William Williamson, of Kirkcaldy, was the architect.

**From the Cork Exhibition.**—The Cork Borough Council decided last week to accept from the Cork Exhibition Executive Committee their gift of an organ, together with the roof and the gallery of the Concert Hall, estimated at £2,000. The Council also agreed to accept the condition imposed, namely, that they should erect a town hall at the rear of the municipal buildings.

**A Church Competition.**—The competitive designs submitted for the United Methodist Free Church and Schools, Seven Kings, E., by Messrs. George Baines, F.R.I.B.A., and R. Palmer Baines, 5, Clement's Inn, Strand, W.C., have been adopted. The first portion, namely, the nave, with tower and temporary apse, &c., is to be proceeded with at once, at an estimated cost of £3,641. The materials are to be—facings in red bricks, dressings in Bath stone.

**A new set of lantern slides** is being published by Messrs. Newton & Co., of Fleet Street, illustrating the growth, structure, defects and conversion of timber. The slides are from actual specimens of wood selected and prepared by Mr. Harold Busbridge, A.R.I.B.A., A.R.C.S., and include a scale of inches on each. Altogether there are forty-four slides, price 1s. 3d. each. A list of them is published by Messrs. Newton.

**The new Buildings of Bury Grammar School** were opened on Thursday by the Earl of Derby. The architect is Mr. W. Venn Gough, of Bristol. They comprise, however, only part of the whole design, which includes a quadrangle embracing separate schools for the respective accommodation of 350 boys and 200 girls; only two sides and a half of the quadrangle have been erected up to the present. The cost of the contemplated schools will be £19,280.

**The "Mechanical World" Pocket Diary and Year Book for 1904** has been published. This issue contains a considerable amount of new matter. The section on valve diagrams has been rewritten. A new table gives the calculated results for the most generally used moduli of sections. Other tables added are—weight of copper bars, stresses on bolts, steam and gas pipe fittings, level and spur gear formulæ. It is published by Messrs. Emmott & Co., Ltd., New Bridge Street, Manchester, and 118, Chancery Lane, London, W.C., price 6d. nett.

**Mr. S. J. Waring, junr.,** president of the Furniture Trades' Provident and Benevolent Association, which has recently been formed, presided at the inaugural dinner at the Criterion. In 1881 the trade employed 84,000 workers; in 1901, 122,000. Mr. Waring detailed the proposal for the provident scheme, which takes the form of a colony of cottage homes for the aged poor and their widows in the neighbourhood of Radlett, in Herts, a convalescent home of rest, and orphanages for the children. During the evening subscriptions amounting to £5,853 were announced, including £1,000 from the president himself. Mr. Waring has also become a member of the committee of experts who will consider the details of Mr. Chamberlain's Tariff Reform Scheme and draw up a model tariff; Mr. Colls, the well-known London builder, is also a member of this committee.

**Rochester Cathedral Tower** is to be rebuilt. The design of the original tower is to be closely followed. A spire in oak and lead will cap the new tower.

**Mr. J. W. Penfold** will retire from the office of hon. secretary to the Surveyors' Institution at the end of this year. He will be succeeded by Mr. Percivall Currey.

**The "Daily Mail" Year Book for 1904,** price 1s. 6d., is a mine of information on all topics. Everything is succinctly given, and reference is made easy by the full index and clear side-heads.

**Messrs. A. J. Arrowsmith & Co.,** designers and makers of interior woodwork panelling, mantelpieces, &c, are removing from No. 80, New Bond Street, to No. 22, Mount Street, Berkeley Square, W., on January 2nd, their lease of the old premises (where they have been established for 123 years) having terminated. The new premises are more convenient and afford better facilities for the transaction of the firm's increasing business.

**Society of Engineers.**—At the annual general meeting held last week Mr. David Butler Butler was elected president. The Bassemer premium of books has been awarded to Mr. Robert J. Thomas for his paper on "Road Maintenance and Administration." The annual dinner was held at the Hotel Cecil on Wednesday, the chair being occupied by Mr. J. Patten Barber.

**Competition Reform Society.**—The Committee disapproves of the conditions in the competition for a free library at Wakefield because "the Council will themselves decide and adjudicate upon the designs, and reserve power, if they think proper, to call in the services of an architect, not being a competitor, to assist them in deciding," &c. Members are requested to abstain from competing unless the conditions are satisfactorily revised.

**Powis Castle,** the Welsh seat of the Earl of Powis, is now undergoing alterations at a cost of £30,000. The walls of the present building, though dating back to the time of Edward II., are well preserved, but the interior, which is largely Elizabethan, has in some parts got out of repair. The castle has hitherto been lighted with oil lamps or wax candles. Now, however, an electricity generating station has been built under the castle rock from designs prepared by Mr. G. F. Bodley.

**A new Mortuary at Richmond, Surrey,** has just been completed. The mortuary itself is divided into two rooms, and has Opaline glass brick walls, top lights and mosaic floor. Sixteen galvanized iron catacombs for bodies are provided. The jury can pass along a passage and look at a body through closed windows, each of which is fitted with blinds. A post-mortem room is also provided. The buildings have been erected by Messrs. W. J. & A. Long, of Richmond, at a cost of £1,480, from designs by Mr. J. H. Brierley, the borough surveyor.

**Manchester Society of Architects.**—At the recent annual dinner Mr. Aston Webb made a sympathetic reference to Mr. Alfred Waterhouse, whose name was so closely associated with Manchester as the designer of the town hall and assize courts, and who, his Manchester friends would be pleased to know, was enjoying a quiet and happy life. They could not but regret that a brain so active and a hand so busy had been stayed, and they accorded him a full-hearted sympathy in his retirement. Mr. Alfred Darbyshire proposed "The Manchester School of Architecture," to which Mr. T. Kay and Professor Capper replied. Professor Capper spoke hopefully of the prospects of the new school, and appealed to architects and the public for support.

# Electrical Notes.

### The Institution of Electrical Engineers.

Apart from the annual dinner, which was as much a success as usual, the event of the week has been the commemoration of the 300th anniversary of the death of Dr. Gilbert. This scientist lived in Colchester and was one of the eminent men who contributed to the great rise in all the arts and sciences during the reign of Elizabeth. His work, "De Magnete," is interesting reading in these days, and signalizes a knowledge which was unfortunately not followed up for many subsequent decades. The mayor and councillors of Colchester were present on this occasion, and Dr. Silvanus Thompson eulogized the memory of Dr. Gilbert. Later, the president, on behalf of the Institution, presented a picture to the mayor, in which Dr. Gilbert is depicted showing his electrical experiments to Queen Elizabeth. The mayor replied in a felicitous speech, recording how his own early experiments in electricity had served as a stepping-stone to the chairmanship of the Electricity Committee, and later to the mayoralty.

### The N.E.C.A. again.

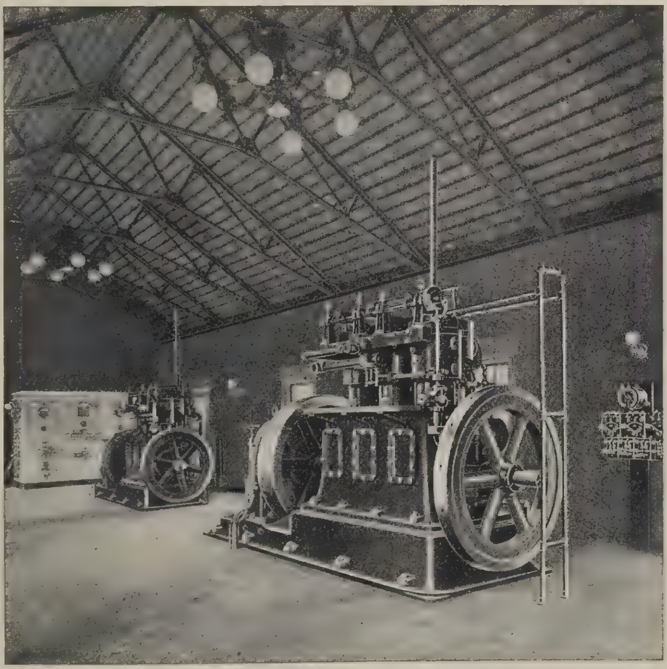
Members of the Manufacturers' Association are beginning to wonder exactly where they are and what they have been let in for by the wonderful agreement to which their committee has bound them. It is no secret that, whilst sympathising with the principles of the movement, many of them are now dubious as to the "workability" of the agreement, and have been apparently taken unawares, being quite unprepared with any policy for January 1st. The whole understanding is fraught with many possibilities of mischief, as rival firms on both sides can play each other tricks if they wish. The first shot has been fired in the columns of the "Electrical Review," where a firm of manufacturers, Messrs. Ernest F. Moy, Ltd., throw down the gauntlet to Messrs. Rashleigh, Phipps & Co., contractors. The latter had written giving the former notice that unless they became members, they (Rashleigh, Phipps & Co.) would be unable to do business with them. Messrs. Ernest F. Moy publish the letter and their reply, the vigorous mailed-fist nature of which has received universal approbation. No doubt some attempt will be made by the N.E.C.A. to smooth over the false move of their *enfant terrible*, but the die has been cast and it remains to be seen how soon the whole combination will break up. Many members of the N.E.M.A. are waiting to see which way the cat is going to jump, and having only joined in order to "lie low." It is quite evident that the whole thing is being fostered from one quarter, which hopes to benefit at the expense of others.

### Electric Latch Releasers.

In most houses which are surrounded by a high wall having a door opening on to the pavement, it is usual to have a wire latch release which can be operated from the hall, so obviating the necessity of the servant going out in all weathers to the street door. The chief disadvantage of such devices is that they frequently get out of order, or the wire breaks. We have seen in operation an electric latch releaser which works very efficiently. It is fixed on the door or in the jamb, and is connected by a twin, well insulated wire to the electric-bell battery inside the house. In the hall an ordinary push is placed in the circuit. When this is pressed, the latch is released and the door slightly opened by a spring buffer. The visitor does the rest. The apparatus is very strongly made and not expensive; it is advisable to soak it in shellac varnish before fixing, in order to make it waterproof, but care must, of course, be taken that the working parts are not clogged. Besides being used for the purpose indicated, it may be applied equally well to any tradesmen's entrance so that the servants do not have to leave the house.

A.M.I.E.E.

**The British Westinghouse Co.** are supplying a 45 kw. continuous-current dynamo, for direct connection to a Westinghouse gas engine, to Messrs. B. Napier & Son, of the Motor Car Works, Acton Vale, W. The machine is to be used both for the lighting and power work.—The company are also supplying two 80-h p. motors, with starting gear, to Messrs. Merryweather & Sons for fitting to fire pumps. These will eventually form part of the extensive gas-driven generating and electric-lighting and power plant which the Westinghouse Company are erecting at Heysham Harbour for the Midland Railway.—The trolley of the Runcorn and Widnes transporter bridge, now in course of erection, will be about 77ft. long by 100ft. across from side to side. There will be sixteen track wheels on each side, and the car, capable of accommodating four 2-horse wagons and 300 persons, will be suspended from the trolley by steel wire ropes. To enable the trolleys to be brought to rest rapidly, in spite of the great momentum of the moving mass, Westinghouse magnetic brake equipments will be fitted to the wheels of the truck, the equipments being modified to suit the special requirements. A large additional order for these brakes has been placed by the Leeds Corporation with the British Westinghouse Co.



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# Tenders.

*Information from accredited sources should be sent to "The Editor" at latest by noon on Monday if intended for publication in the following Wednesday's issue. Results of Tenders cannot be accepted unless they contain the name of the Architect or Surveyor for the work.*

*Addressed postcards on which lists of tenders may be stated will be sent post free on application to the Manager,* BUILDERS' JOURNAL, 6, *Great New Street, Fetter Lane, E.C.*

**Anstruther (Fife).**—For the construction of a stone lifeboat house and stone and concrete slip, for the Royal National Lifeboat Institution. Mr. W. T. Douglass, engineer and architect, 15, Victoria Street, London, S.W.:—

| | |
|---|---|
| J. Adams & Co., Glasgow | £1,918 0 0 |
| W. G. Fleet, Lenzie | 1,800 0 0 |
| R. Young & Co., Edinburgh | 1.794 15 0 |
| M. Dinnie, Stratford | 1,734 5 8 |
| J. Miller, Anstruther | 1,606 5 0 |
| W. Fasey, Manor Park, Essex | 1,599 15 10 |
| J. Laurie,* Anstruther | 1,484 12 3 |

* Accepted.

**Clonmel (Ireland).**—For building and completion of two artizans' and ten labourers' dwelling-houses, with out-offices and other appurtenances, for the Corporation:—

| | |
|---|---|
| Lonergan Brothers, Morton Street | £1,880 |
| T. Cleary & Sons, Gladstone Street | 1,550 |
| J. Boles,* 19, Mary Street | 1,498 |

* Accepted. [All of Clonmel.]

**Devonport.**—For alterations to the "Jubilee Inn," Fore Street, Torpoint. Mr. E. M. Leest, architect, Devonport. Quantities by Messrs. Leest & Adams, surveyors, Devonport:—

| | |
|---|---|
| Smith & Son | £319 15 0 |
| G. F. Kingdom | 250 16 7 |
| Snell & Son | 230 0 0 |
| R. Kent | 227 13 10 |
| S. E. D. Ough,* Saltash | 214 0 0 |

* Accepted.

**Devonport.**—For alterations and additions to the "Half Moon" Inn, George Street Devonport, for the Plymouth Breweries, Ltd. Mr. E. M. Leest, architect, Devonport. Quantities by Messrs. Leest & Adams, surveyors, Devonport:—

| | |
|---|---|
| T. Taylor & Son | £490 0 |
| J. H. Blackell & Son | 421 0 |
| Pearn Brothers | 397 0 |
| G. H. Smith & Son,* Devonport | 371 15 |

* Accepted.

**Devonport.**—Accepted for alterations to the "Rose and Crown" public-house, Pembroke Street, Devonport, for Messrs. Ash & Son. Mr. E. M. Leest, architect, Devonport:—

| | |
|---|---|
| T. May & Son, Plymouth | £411 15 |

**Devonport.**—For taking down old building and erecting new printing works, for Messrs. W. G. Swiss & Son. Mr. E. M. Leest, architect, Devonport. Quantities by Messrs. Leest & Adams, Devonport:—

| | |
|---|---|
| Littleton & Son | £539 0 |
| F. Watts | 514 2 |
| Smith & Son | 499 15 |
| A. H. Northcott | 483 0 |
| A. Sleeman | 469 10 |
| H. Stanbury | 465 0 |
| T. Jenkin & Son* | 453 0 |

* Accepted.

**Eastbourne.**—For erection of new public baths, Old Town, for the Corporation. Mr. W. Chapman Field, architect, Town Hall, Eastbourne:—

| | |
|---|---|
| F. G. Minter, Putney | £4,210 |
| A. J. White | 4,036 |
| J. Martin | 3,759 |
| Miller & Selmes | 3,720 |
| E. Cornwell & Son | 3,660 |
| C. P. Dennis & Co.* | 3,548 |
| M. Hookham† | 2,934 |

* Accepted. † Withdrawn.

[Rest of Eastbourne.]

**Fleete (near Margate).**—For concrete reservoir (1,000,000 gals. capacity) for the Corporation. Mr. A. Latham, engineer, M.I.C.E., 15, Cecil Square, Margate:—

| | |
|---|---|
| Anderson Brothers, Margate | £9 565 2 9 |
| H. Shardlow, Nottingham | 8,592 0 0 |
| H. T. Binns, Croydon | 7,080 18 8 |
| T. Pedrette, London | 7,681 3 7 |
| W. W. Martin, Ramsgate | 6,910 0 0 |
| Denne & Co., Deal | 6,807 0 0 |
| Castle & Co., Westgate | 6,585 6 7 |
| W. J. Adcock, Dover | 6,412 12 6 |
| F. R. Miskin, Rochester | 6,274 0 4 |
| Paramor & Son, Margate | 6,235 19 6 |
| A. Osenton, Reading | 6,034 3 7 |
| A. Fasey & Son, London | 5,984 0 0 |
| H. Ashley, Mansfield | 5,849 8 6 |
| G. Browning, Canterbury | 5,794 0 0 |
| R. Roberts, Colwyn Bay | 5,793 8 0 |
| G. Bell, London | 5,689 0 0 |
| J. W. Dean, Margate | 5,530 13 3 |
| A. E. Nunn, Tenterden | 5,487 8 6 |
| Denne & Son,* Walmer | 5,479 0 0 |

* Accepted. [Engineer's estimate, £5,794.]

**Ipswich.**—For the erection of a new store in Surbiton Road. Messrs. W. Eade, F.R.I.B.A., & E. T. Johns, architects, Cornhill Chambers, Ipswich:—

| | | Less if front in deal. |
|---|---|---|
| G. Burgoyne | £2,300 0 | £45 |
| S. Kenney | 2,086 0 | 26 |
| Scales & Robins | 2,010 0 | 50 |
| Cooper & Haward | 1,975 0 | 35 |
| C. Gimson | 1,930 0 | 50 |
| F. Bennett | 1,900 10 | 35 |
| E. West | 1,900 0 | — |
| G. Grimwood & Sons | £1,895 0 | £45 |
| H. J. Linzell | 1,885 0 | 33 |
| W. H. Death | 1,849 0 | — |
| E. Catchpole | 1,795 0 | 50 |
| A. Sadler | 1,766 0 | 40 |
| T. Parkington & Son | 1,755 0 | 40 |
| W. H. Bloomfield | 1,750 0 | 15 |
| S. Skerritt* | 1.681 17 | 20 |
| John Smith & Co. | 1,650 0 | 30 |

* Accepted.

**Llandrindod Wells.**—For the erection of four houses in Craig Road, for Mr. E. Bufton. Mr. E. Peters Morris, architect, Llandrindod Wells:—

| | |
|---|---|
| G. Bullock | £2,497 |
| D. Meredith | 2,418 |
| R. Davies,* Llandrindod Wells | 2,300 |
| Lloyd & Lloyd | 2,260 |

* Accepted.

**Oxford.**—For pulling down and re-building "The Cottage," Banbury Road. Mr. Herbert Quinton, architect, 22, George Street, Oxford. Quantities by him:—

| | |
|---|---|
| E. W. Turner | £1,670 0 |
| Money & Wild | 1,619 0 |
| Hutchins & Sons | 1,575 0 |
| Symm & Co.* | 1,535 12 |

* Accepted.

**Radcliffe (Northumberland).** — For building butcher's premises and manager's house, for the Radcliffe Co-operative Society, Ltd. Mr. J. G. Crone, architect, 26, Cloth Market, Newcastle-upon-Tyne:—

| | |
|---|---|
| J. McEwen, Newcastle on-Tyne | £2,635 19 |
| Gordon Brothers, Stakeford, Northumberland | 1,327 15 |
| R. & G. Brown, Amble, Northumberland | 1,248 0 |
| J. W. Braithwaite & Co., Newcastle-on-Tyne | 1,243 0 |
| W. C. Tyrie, Gateshead-on-Tyne | 1,189 0 |
| R. Brown, Amble | 1,180 0 |
| A. Douglas, Amble | 1.170 0 |
| Elliott Brothers, Chathill | 1,167 0 |
| R. Carse & Son, Amble | 1,142 0 |
| W. S. Anderson, Newcastle | 1,118 9 |
| T. B. Shilling,* Sunderland | 1,064 0 |

* Accepted.

**Sheffield.**—For the erection of sale shops and artizans' dwellings, Infirmary Road and Lock Street, for City Council. Messrs. C & C. M. Hadfield, architects, 19, St. James's Street, Sheffield:—

| | |
|---|---|
| J. Webster | £4,483 0 0 |
| Dawson, Jones & Co. | 4,462 12 6 |
| J. Fidler | £4,450 0 0 |
| W. & A. Forsdike | 4,405 0 0 |
| M. Grantham | 4,400 0 0 |
| Ash, Son & Biggin | 4,388 0 0 |
| Eshelby & Son | 4,300 0 0 |
| A Bradbury | 4,078 0 0 |
| Vasey & Son | 3.851 0 0 |
| J. Robertson | 3,840 2 6 |
| Boot & Son | 3,770 0 0 |
| O'Neill & Son* | 3,709 0 0 |

* Accepted.

**Sonning.**—For the erection of two houses, for Mr. G St. Croix Rose. Mr. Arthur Vernon, architect, 29, Cockspur Street, London, S.W., and High Wycombe:—

| | |
|---|---|
| Y. J. Lovell | £1,592 |
| G H Gibson | 1,525 |
| G. Robinson | 1,493 |
| Silver & Son | 1,494 |
| H. Flint,* Wycombe | 1,485 |

* Accepted

**Southminster, Essex.**—For alterations and additions to two houses and shops. Mr. R. Mawhood, architect, Chelmsford:—

| | |
|---|---|
| E. B. Trussoll | £295 |
| J. Bishop,* Southminster | 265 |

* Accepted.

**Stock, Essex.**—For the erection of a new house. Mr. R. Mawhood, architect, Chelmsford:—

| | |
|---|---|
| A. Brown & Son | £891 |
| F. Weight | 652 |
| Baker & Sons | 645 |
| J. Rayner | 638 |
| A. Woodward,* Stock | 615 |

* Accepted.

**Ventnor.** — For the erection of stables, &c., at Steephill Castle, for Mr. J. Morgan Richards. Mr. Theodore R. Saunders, architect, Belgrave Chambers, Ventnor, I.W.:—

| | |
|---|---|
| A. Dash, Ventnor | £3,175 0 |
| H. Linington, Wroxhall | 2,973 12 |
| H. Ingram & Sons, Ventnor | 2,860 0 |
| A. Sims,* Ventnor | 2 653 0 |

* Accepted.

**Wickford, Essex.**—For the erection of a new house and shop. Mr. R. Mawhood, architect, Chelmsford:—

| | |
|---|---|
| F. Weight | £733 0 |
| S. Norden | 670 0 |
| J. Rayner | 615 10 |
| Baker & Sons,* Danbury | 608 0 |

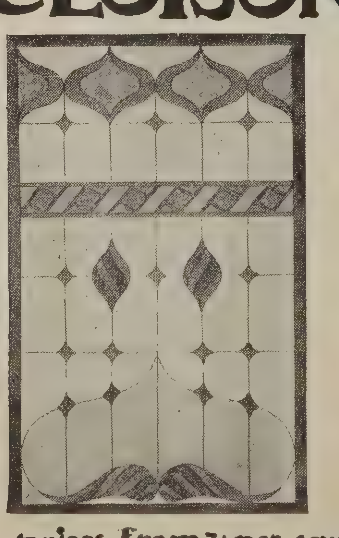
* Accepted.

**London, N.W.**—For the erection of Hampstead Hospital. Messrs. Young Hall &, architects, 17, Southampton Street, Bloomsbury, W.C.:—

| | Carcase. | Finishings. | Boundary Walls, &c. | Total. | Deduct if Victoria Stone. |
|---|---|---|---|---|---|
| W. Willett | £14,660 0 | £15,025 0 0 | £902 0 | £30,587 0 0 | £610 0 0 |
| Holloway Brothers | 13.246 0 | 15,566 0 0 | 1,058 0 | 29,870 0 0 | 122 0 0 |
| Leslie & Co. | 12,9'6 0 | 15,043 0 0 | 1,019 0 | 29.028 0 0 | 264 0 0 |
| C. Brightman | 13,069 17 | 14,730 0 0 | 1,050 0 | 28,909 17 0 | 555 0 0 |
| Knight & Son | 13,411 0 | 14,513 0 0 | 912 0 | 28,866 0 0 | 351 0 0 |
| S. J. Scott | 12,910 0 | 14,929 0 0 | 1,024 9 | 28 863 0 0 | 322 0 0 |
| W. Downs | 12,738 0 | 14,811 0 0 | 99[illegible] 0 | 28,542 0 0 | 220 0 0 |
| Ferguson & Co. | 12,960 0 | 14,400 0 0 | 1,137 0 | 28,497 0 0 | 674 10 3 |
| Pattinson & Sons | 12,890 0 | 14,631 9 0 | 909 0 | 28,430 0 0 | 65 0 0 |
| C. Ansell | 12,775 0 | 14,660 0 0 | 97[illegible] 0 | 28,406 0 0 | 255 0 0 |
| Holliday & Greenwood | 12,577 0 | 14,861 0 0 | 933 0 | 28,371 0 0 | 312 0 0 |
| B. E. Nightingale | 12,399 0 | 14,866 0 0 | 999 0 | 28,264 0 0 | 164 0 0 |
| W. Lawrence & Son | 12,449 0 | 14 695 0 0 | 1,005 0 | 28.149 0 0 | 316 10 0 |
| Gough & Co. | 12,700 0 | 14,440 0 0 | 900 0 | 28,040 0 0 | 140 0 0 |
| W. Whitehead | 12,235 0 | 14,780 0 0 | 950 0 | 27,965 0 0 | 198 0 0 |
| G. Henson | 12,622 4 | 14,459 8 9 | 877 3 | 27,958 15 9 | 392 10 0 |
| H. Martin | 12,385 0 | 14,530 0 0 | 862 0 | 27,777 0 0 | 369 0 0 |
| J. & M. Patrick | 12.600 0 | 14,000 0 0 | 870 0 | 27.470 0 0 | 227 0 0 |
| Patman & Fotheringham | 12,227 0 | 14,273 0 0 | 900 0 | 27,400 0 0 | 250 0 0 |
| Kerridge & Shaw | 11.688 0 | 14,373 0 0 | 978 0 | 27,039 0 0 | 234 10 0 |
| Perry Brothers | 11.997 0 | 13,897 0 0 | 1,127 0 | 27,021 0 0 | 237 0 0 |
| Godson & Sons* | 11,198 0 | 13,881 0 0 | 924 0 | 26,003 0 0 | 282 0 0 |

* Accepted.

"CLOISONNE GLASS"



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# THE ENGLISH HOUSE OF THE FUTURE.

### Opinions of Leading Architects.

IN an article appearing in the Christmas number of "The Strand Magazine" the opinions of Mr. Norman Shaw, Mr. T. G. Jackson, Mr. John Belcher, Mr. Aston Webb, Mr. G. F. Bodley, Mr. Reginald Blomfield, Mr. Edward Bellamy, Mr. Jerome K. Jerome and Mr. H. G. Wells on "The English House of the Future" are elicited.

**Mr. Shaw**

does not think the present century will evolve a distinctively English type of architecture. He observes how, during the last hundred years, there have been many men of great ability, but unhappily, instead of carrying on an old tradition and developing new phases of their art (which might in many cases have resulted in the creation of a new style) they spent their lives in making reproductions of old and worn-out styles: whereas the French have preserved an unbroken tradition from the tenth century practically up to the present day, with the result that many of their works are truly great and as refined as the best old Greek work, with the immense advantage that they are absolutely modern and at the same time entirely French in feeling. In reply to the question, "Will not future urban conditions gradually contribute to a revolution in the forms and fabric of the houses?" Mr. Shaw says he cannot see why they should. "Fifty years ago houses were mostly cemented over, and had large plate-glass windows. Now they are mostly of red brick with mullions and lead lattice glazing. Some thirty or thirty-five years ago my clients used openly to curse me for proposing lead lattice; now people do not seem to be able to get enough, and use sash bars, lead lights and plate glass all in the same window! But that does not point to a distinctively English type of architecture. It is only a change of taste, a fashion, a loose way of doing things, and bad art—in no way can it rank higher than the average dressmaker. A Fine Arts Minister is all nonsense at the present time when every man—be he architect, painter or sculptor—is a law unto himself. What harmony and unity can there be between 'Georgian' and the style of the new Roman Catholic Cathedral in Westminster, and how is a Fine Arts Minister to regulate this?"

**Mr. Jackson**

says that though the greater part of what we do is either, on the one hand, directly imitative of bygone styles, or, on the other, aggressively bizarre—the latter, especially in our commercial architecture, resulting in buildings perhaps the basest the world has ever seen—still there is a fair proportion of sober, sensible, restrained architecture springing up around us, which has a character of its own, and may hereafter be regarded as typical of our day at its best.

**Mr. Belcher,**

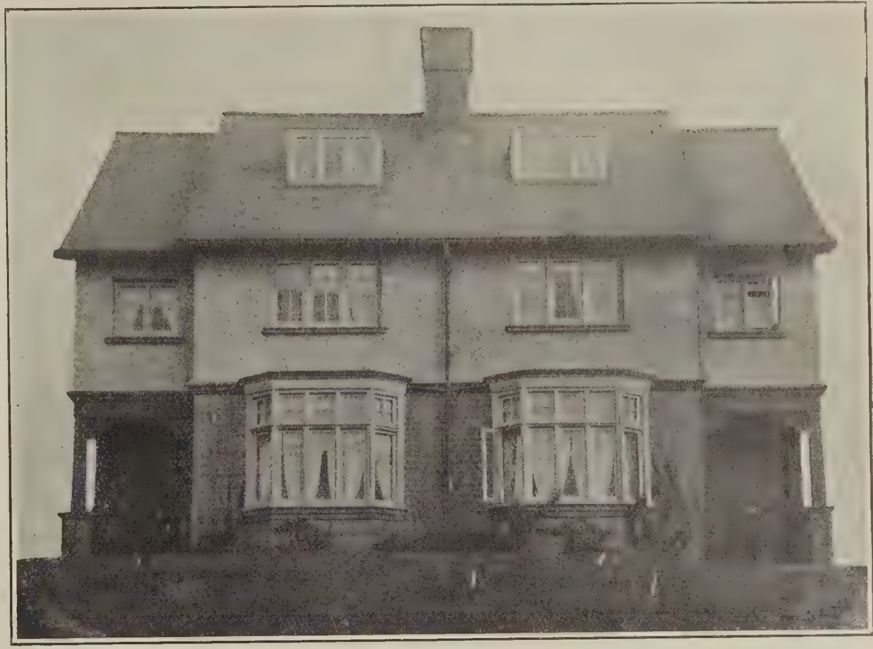
after recalling what London might have been if Wren's plan had been carried out after the Great Fire, says that if our cities are to be improved and our architecture developed a Minister of Fine Arts is needed, to insist on a high standard.

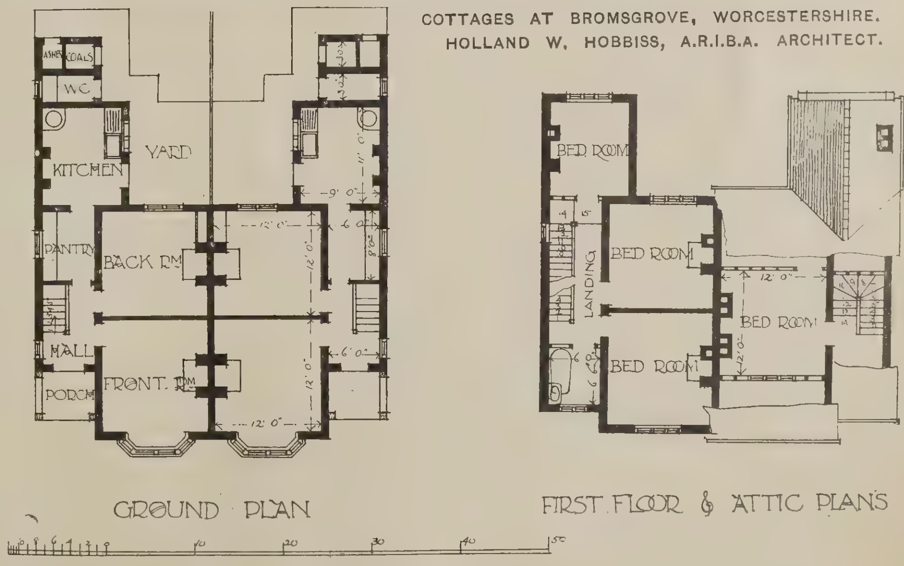
**Mr. Aston Webb**

gives his opinion definitely that there will be no entirely new type of architecture in the near future. "But if we take the best architecture of the present day we can surely see a style developing which is distinctive of this country. Our domestic architecture, inspired by Mr. Norman Shaw and continued by many able followers, is distinctive, and greatly in advance, I venture to think, of any other country at the present day. Again, what could be more distinctive than the series of Board schools erected in the early days of the London School Board, and which formed a type for similar buildings throughout the country? And what country can show a nobler series of modern churches than those erected, say, by Pearson, Butterfield, Sedding, Bentley and others still with us?"

**Mr. Bodley**

sees no signs of the birth of a new style that is likely to become at all general. "At the present moment I think artistic minds would shrink from any prevalent manner of architecture becoming general. It is 'not good enough.' We must wait for days not only of more art, but of greater unity of feeling."





COTTAGES AT BROMSGROVE, WORCESTERSHIRE.
HOLLAND W. HOBBISS, A.R.I.B.A. ARCHITECT.

**Mr. Blomfield**

says: "It seems to me that for the last one hundred years we have had no distinctively English type of architecture owing to the fashion for archæological revivals. There is evidence of growing impatience with these revivals, and of a tendency to swing back to the less exuberant forms of Classic. I think it possible that a new type may evolve itself out of the actual parts of construction, expressing itself, not in what is called 'Free Classic,' which is usually a stalking-horse for incompetence, but in what we may call rationalized Classic. As to a Minister of Fine Arts, there seems to be a growing need of some such authority."

**Mr. H. G. Wells**

says: "In spite of such vile exploits as the National Liberal Club, or that terrible mixture of mediævalism and machinery, the Tower Bridge, I do not think that the contemporary architect has any reason to be ashamed of himself. He has to solve problems infinitely more complex and difficult than those of his predecessors; there is no comparison in difficulty between a Greek temple and a modern hotel of fifteen storeys on a 40yd. street." Mr. Wells proceeds to deal with "The Twentieth-Century House," which, possibly, will have no chimneys (electric heating superseding the coal fire); while the shafts for the admission of air to the rooms will offer scope for the metal designer, and the emergence of the shaft on the roof will be made an architectural feature, which will also result in windows being no longer needed for ventilation, so that they may be of any shape and in any position: all corners of rooms will be rounded, and walls will be of tubing and plaster: finally the architect will be called upon to design "a wide forest of buildings in which many families may live, and which will contain a common restaurant and *trattoria*, a common infants' school, club apartments and the like." Readers will agree that Mr. Wells, though a prophet, is not altogether visionary.

# Enquiries Answered.

*The services of a large staff of experts are at the disposal of readers who require information on architectural, constructional or legal matters. Questions should in all cases be addressed to the Editor. The querist's name and address must always be given, not necessarily for publication.*

### R.I.B.A. Intermediate Examination.

BLACKPOOL.—PRESTON writes: "What books are most suitable for the above? Please forward me your book list."

Obtain the R.I.B.A. Kalendar, price 2s. 6d., from No. 9, Conduit Street, W. Our book lists will be found in recent issues of THE BUILDERS' JOURNAL.

### Government Appointments.

CHATHAM. — J. L. H. writes: "What Government appointments are open to a man twenty-eight years of age, trained as an architect and surveyor and at present engaged as civil engineer's assistant, and where can particulars of such appointments be obtained?"

Architects' assistants are engaged by the Office of Works without examination; you should write to the secretary, Storey's Gate, S.W. Examination are occasionally held for other suitable berths, particulars of which can be obtained from the Civil Service Commissioners, Victoria Street, S.W.

### Hospitals.

HOSPITAL writes: "I have a small hospital to design, and would be glad to know if 'Small Hospitals,' by A. Worcester and W. Atkinson, advertised in your list of books, is a well-illustrated work with good practical information on the subject. Is it an American work?"

Mr. B. T. Batsford, of 94, High Holborn, writes in reference to the above: "I am not acquainted with the book mentioned. It is a small American book, price 1 dol. 25 cents, and, according to a catalogue description, has 'plans for a small hospital by William Atkinson, architect.' I do not think it would be suitable for your correspondent's requirements. The best books he could have are those described on pages 17 and 18 of my list." These are given in our No. 2 book list.

### Cement for Moulds.

LONDON.—ENQUIRER writes: "Kindly name any cements that will stand high pressure in the form of moulds."

We know of no cement which can be used for such a purpose. Portland cement will stand the greatest pressure of any, but it would not stand the wear and tear of continual use in moulds; it might possibly serve your purpose if you made the moulds of Portland cement, then coated them with plumbago, and finally electrically deposited a layer of copper upon their surface about ¼in. thick. This would stand the wear for some time and would give a sharp impression —the question is, would it pull off from the face or is the pressure so great as to crumble the cement under it?

### Commission on Work Done.

RIPON.—BUTCHER writes: "What commission would be fair to make in the following case? An architect prepares plans and details for fittings or fixtures to a shop, consisting of screen, marble-work, &c. The designs are submitted to the client, and at his request altered several times. Estimates are obtained for the work (which is partly included in the contract) but the architect on writing for further instructions is informed by his client that the matter must stand in abeyance, as no more contracts are to be let. Meanwhile the client gives the order direct for the work and superintends it himself, being under the impression that he will save the architect's full commission of 5 per cent."

For designs for furniture and fittings an architect is entitled to more than 5 per cent. on the cost (or, if not executed, the *estimated* cost), but the exact amount depends upon the time, trouble and skill involved.

### Removing Water from Concrete Ceiling.

T. C. S. writes: "How can I remove water from the concrete ceiling shown by the accompanying sketch (not reproduced)?"

The sketch sent in is so rough and indefinite that I am quite unable to make out the construction, although it is no doubt clear enough to you. The room is 100ft. long and 50ft. wide, and the deepest support for the flat concrete roof appears to be a "12in. beam"; but whether this is a rolled joist or not, and whether supported in the centre or otherwise, is not clear. Then rolled joists are shown above the 12in. beam and transversely to it, but they may be intended to be between the beams. Above the rolled joists again, in the same direction as the 12in. beam, is marked a 4in. beam, and breeze-concrete with "a vulcanite roof" is shown as extending from the bottom of this beam for a thickness upwards of about 12in. or 18in., if it may be taken as bearing any scale of proportion at all. The water appears to gather underneath the concrete; but whether the upper surface is level or laid with falls, whether the roof has sagged for want of stiffness in the supports and water lies on top, whether it is laid stiffly and is simply porous, or whether it is new work from which the water has not been absorbed, there is nothing to judge by. By vulcanite is presumably meant asphalt, which ought to be waterproof even with water lying on it.

HENRY ADAMS.

### Filling for Half-timber Work.

BEDFORD.—H. writes: "What is an inexpensive and reliable method for filling in half-timber (without using brickwork) that will be watertight after shrinkage of timbers, and also allow the timber to show inside and outside? It is proposed to use English oak 4in. thick and about 6in. on face, spaced about 2ft. apart. Would expanded metal on wood fillets be suitable?"

Personally I very much prefer the brickwork externally, as making a more substantial and more fireproof building, but there are several ways of filling in between the half-timbering without the use of brick—for instance, you may weather-tile (or even weather-board!) the spaces, setting the tiles in cement-mortar, if you so desire; or you may rough-cast or "pebble-dash" the face on wooden fillets or expanded metal as you suggest. I have a very satisfactory and watertight building constructed of half-timbers and rough-cast on laths. The interior may be of lath and plaster (or, for preference, expanded metal again), or—as I think preferable—may be covered with narrow grooved and tongued boarding. This latter may, with advantage, be carried up wainscot high, finished with a neat rail or moulding at the top, and the upper portion of the walls plastered in the usual way. Of course in high-class work the lower portion may be panelled.

F. S. I.

## ANCIENT LIGHTS.

THE Society of Architects held the first meeting in its new hall at Staple Inn Buildings last Thursday, Mr. Walter W. Thomas presiding. After the presentation of the Society's gold medal to Mr. W. G. Jenkins a discussion took place on the Bill to reform the law of Ancient Lights prepared by a joint committee of the R.I.B.A. and the Surveyors' Institution, introduced in the House of Commons last session. Mr. Ellis Marsland objected to the Bill on the ground that it dealt with easements of light as if they were to be allowed to continue. When sky-signs were discovered to be a nuisance, instead of recognizing them as vested interests, they were treated as an evil and forbidden. In his opinion the question of ancient lights should be dealt with on similar principles. If a man could not light his premises across his own cartilage he should not be allowed to light them across the property of his neighbour. In Scotland the right of ancient lights was unknown, and even in cases where such rights had been in existence for twenty years they were ignored. In his view the form which an amendment of the law ought to take was to enact that from and after a certain date all rights of light across adjoining premises should cease to exist. A motion to oppose the Bill and to employ counsel to protect the interests of the Society was carried unanimously.

# Builders' Notes.

**The Additions to the General Hospital, Rotherham**, are being warmed and ventilated by means of Shorland's patent double-fronted Manchester stoves encased in richly-glazed faïence, supplied by Messrs. E. H. Shorland & Brother, of Manchester.

**London Water Purchase.**—Last week the East London Water Company were awarded £3,900,000 as compensation for compulsory purchase: their claim was for £7,248,112. This award, however, is subject to the obligations of the Chamberlain's sinking fund; if the Court of Appeal reverse the appeal the award will be £4,300,000.

**Funereal Wallpaper.**—An old lady who has just taken a flat in Hammersmith has an extraordinary taste in wallpaper. Before signing the lease she stipulated that the landlord was to put black wallpaper on the walls of every room in the flat except the kitchen. She was very particular in impressing upon him that the colour of the paper was to be a dull black, unrelieved in any way.

**Scarcity of American Wood.**—For some weeks past considerable irritation has been evinced in the British spade and shovel trade owing to the advance in the cost of wooden handles. The chief source of supply for these is the United States, but the American "combine" has lately advanced its prices from 25 per cent. to 40 per cent., and the effect is that the trades in question are seriously hampered. Makers of plumbers' woodwork are feeling the scarcity of the special kinds of woods they have been accustomed to use.

**Sewage Disposal.**—The second edition of an extremely useful table of the Local Government Board requirements as to sewage-disposal schemes, compiled by Mr. S. H. Adams, A.M.I.C.E., of Adams Hydraulics, Ltd., York, and 7, Old Queen Street, Westminster, has been published by the St. Bride's Press, Bride Court, Fleet Street London, price 2s. 6d. The requirements remain practically the same as published in 1900 by Mr. Adams, who is one of the foremost authorities on sewage disposal; the data now added refers almost exclusively to continuous or spray filters.

**Plumbers' Apprentices.** — The Plumbers' Company announces that, on application, it will register the names of apprentices free of cost. Apprentices so registered will be eligible for the graded examinations of the Company in such grades of the examinations as may be certified by teachers of plumbing classes, or on other evidence of fitness. Apprentices who pass the final examination are eligible to receive the certificate of registration under the national registration of plumbers. Those who pass first-class in workmanship as well as in technical knowledge are also eligible for the freedom of the Company.

**The Plumbers' Registration Bill** that passed the House of Lords in 1902, and which will again be introduced in the forthcoming session of Parliament, has the full approval of the Local Government Board.

**Institute of Sanitary Engineers.** — The annual dinner was held last Wednesday at the Holborn Restaurant, Mr. W. J. Dibdin, president, occupying the chair. The Institute was formed in 1895 with 100 members: now its membership totals 504.

**A Church Steeple for £2 10s.**—At Chester-le-Street, Durham, a unique lot was put up at a recent auction sale. This was the original steeple of the church of the town, supposed to be more than 700 years old. It was taken down from the church some years ago, and since that time has stood in a prominent part of the town, where it has attracted a good deal of attention. The highest price offered was £2 10s., so the lot was withdrawn.

**Messrs. Mellowes & Co., Ltd.**, of Sheffield and London, have orders in hand for the glazing on their imperishable "Eclipse" system of the roofs of the following buildings:—New Midland Station, Sheffield; three sub-stations for the London Underground Electric Railway; erecting shops for Marshall, Sons & Co., Ltd., Gainsborough; Heysham Harbour Goods Shed, Midland Railway; Covent Garden Foreign Flower Market; Central Station extensions, Glasgow; new fitting shop for Head, Wrightson & Co., Thornaby-on-Tees; new shops, Metropolitan Railway and Carriage Co., Ltd., at Birmingham, and for Greening & Sons, Warrington; Queen's Road Car Sheds, Sheffield Corporation; Woodford Station, Great Central Railway; and extensions for the British Westinghouse Co., Ltd., at Manchester.

**Deposits in Water Pipes.**—At a meeting of the Institution of Civil Engineers last week a paper on "Deposits in Pipes and other Channels conveying Potable Water" was read by Prof. J. Campbell Brown. As a result of prolonged experiments the lecturer was enabled to state that the deposits were of two kinds—(*a*) Deposits of alkaline carbonates from calcareous waters; (*b*) black slime, derived from certain waters, chiefly Welsh, produced by gelatinous and filamentous non-organisms which grew and extracted iron from the water and died at one end while they grew at the other. Solid rock particles and binoxide of manganese were also entangled in the slime. A subsequent paper by Messrs. Osbert Chadwick and Bertram Blount dealt with "The Purification of Water highly charged with vegetable matter," the deleterious effects of which had been obviated by systematic aëration.

**Builders at Dinner.**—At the annual dinner of the Edinburgh, Leith and District Building Employers and Allied Trades' Association, and the Building Trades' Exchange, Councillor Neil M'Leod said their association was started in the year 1871, when Mr. James Steel, now Sir James Steel, Bart., was elected president. The wages of masons at that time were 6½d. per hour and labourers 4½d. per hour. He suggested that they might help to advance technical education by giving four or more bursaries to apprentice lads attending technical classes—for efficiency in masonry work and building construction, for carpentry, joinery and construction in timber work, for plumbing and sanitation, and for general knowledge of the composition of materials and their uses. By doing something of this sort they would not only benefit themselves but also the city and the country.—The annual dinner of the Newport Master-Builders' Association was held on December 11th, under the chairmanship of Mr. W. A. Linton, the president for the year.

# Trade and Craft.

### Modern Stained Glass.

Mr. Thomas William Camm, of The Studio, Smethwick, near Birmingham, very truly observes that perhaps two-thirds of the stained-glass windows of our churches are the output of firms devoted to commercial enterprise, whose main object is to grasp the largest profit; so that a commercial maxim has arisen to the effect that "no man who has to employ skilled labour can grow rich." The object of the manufacturer is to minimize skilled labour, and, judging by what one constantly sees, he has effected his purpose. In the execution of a window by such a firm, the heads, hands and feet are allotted to one man, drapery to a second, ornamental work to a third; and the sections thus made never come together until they reach the glazier. Instead of the subject being treated as a whole by one man working in the spirit of the story, one gets a patchwork, each patch being perhaps technically excellent, but utterly devoid of interest, life and artistic value. It is Mr. Camm's object to secure character and individuality in his designs. He assures us he is not one to whom the late poet laureate's line—"The prophets blazoned on the panes"—reads "The profits," &c. He applies himself very intimately to the work, both in itself and in its relation to the surrounding architecture. He will be glad to reply to any enquiries, and will furnish special designs free of charge, provided they are returned.

### Surveying and Drawing Instruments.

In directing attention to the twenty-sixth edition of Messrs. W. F. Stanley & Co.'s catalogue of surveying and drawing instruments we cannot do better than quote some of the remarks made in the preface. The firm has now reached its jubilee. Originally, when the demand for instruments was small, hand work only was possible, but now, when the business has become the largest of its kind in the world, the quantity of work permits high-class machinery to be employed for many parts, by which much greater accuracy and solidity of construction are secured. Thus, for instance, a theodolite when made by hand was in 226 pieces; while now, by shaping the parts out of the solid, it is made in 102 pieces. This obviates attachments of many parts by screws—always liable to get loose—which not only ensures durability with lightness in the instrument, but permits it to keep in perfect adjustment under rougher usage than the older form could endure. The same rule holds with mining dials, levels and other instruments. In this respect Messrs. Stanley call attention to their new engineer's level, a very neat instrument. Further, many refinements have been adopted which would be expensive if done by hand work, as in superior theodolites the horizontal limbs are now covered, tangent screws work against spring pistons, readers are hinged to turn up without separation, &c. Messrs. Stanley are also able to meet larger demands; they have generally about 200 theodolites and 300 levels in stock, in 98 varieties. Drawing instruments have been improved in detail by them, the working parts being now made by exact machines. Machinery for dividing surveying instruments and scales has been increased by two very perfect engines, driven by power. By the extension of their premises at Norwood, greater time is allowed for the seasoning of all woods and ivory used, which is only possible with a very large stock of material cut to size. More than 2,500 articles are given in the catalogue (G) now under notice. A complete stock of surveying and drawing instruments, including every article used by the architect and engineer, is kept at Great Turnstile, Holborn, where it is most desirable, for promptness of execution, that orders for this class of work should be given. An optical, meteorological and photographic stock is kept at Railway Approach, London Bridge, and a small stock of surveying and drawing instruments at 8, Victoria Street, Westminster, for the convenience of local offices.

# Current Market Prices.

| | | £ | s. | d. | £ | s. | d. |
|---|---|---|---|---|---|---|---|
| **FORAGE.** | | | | | | | |
| Beans .. .. .. | per qr. | 1 | 14 | 0 | 2 | 0 | 0 |
| Clover, best .. .. | per load | 4 | 5 | 0 | 4 | 10 | 0 |
| Hay, good . .. .. | do. | 3 | 12 | 6 | 4 | 0 | 0 |
| Sainfoin mixture .. | do. | 3 | 15 | 0 | 4 | 5 | 0 |
| Straw .. .. .. | do. | 1 | 10 | 0 | 2 | 0 | 0 |
| **OILS AND PAINTS.** | | | | | | | |
| Castor Oil, French .. | per cwt. | 1 | 0 | 5 | — | | |
| Colza Oil, English .. | do. | 1 | 3 | 6 | — | | |
| Copperas .. .. | per ton | 2 | 0 | 0 | — | | |
| Lard Oil .. .. .. | per cwt. | 2 | 15 | 0 | 2 | 17 | 0 |
| Lead white, ground, carbonate .. .. | do. | 1 | 4 | 10 | — | | |
| Do red .. .. .. | do. | 1 | 0 | 4½ | | | |
| Linseed Oil, barrels .. | do. | 0 | 17 | 11½ | — | | |
| Petroleum, American .. | per gal. | 0 | 0 | 7⅝ | 0 | 0 | 7⅞ |
| Do Russian .. | do. | 0 | 0 | 5¾ | 0 | 0 | 7⅛ |
| Pitch .. .. .. | per barrel | 0 | 8 | 0 | — | | |
| Shellac, orange .. .. | per cwt | 11 | 10 | 0 | — | | |
| Soda, crystals .. .. | per ton | 3 | 2 | 6 | 3 | 5 | 0 |
| Tallow, Town .. .. | per cwt. | 1 | 7 | 6 | — | | |
| Tar, Stockholm .. .. | per barrel | 1 | 2 | 0 | | | |
| Turpentine .. .. | per cwt. | 1 | 13 | 10½ | — | | |
| **METALS.** | | | | | | | |
| Copper, sheet, strong .. | per ton | 71 | 0 | 0 | - | | |
| Iron, Staffs., bar .. .. | do. | 6 | 0 | 0 | 8 | 10 | 0 |
| Do. Galvanised Corrugated sheet .. | do. | 10 | 7 | 6 | 10 | 12 | 6 |
| Lead, pig, Soft Foreign .. | do. | 11 | 7 | 6 | — | | |
| Do. do. English common brands .. | do. | 11 | 15 | 0 | — | | |
| Do. sheet English 3lb. per sq. ft and upwards .. | do. | 14 | 0 | 0 | — | | |
| Do. pipe .. .. .. | do. | 15 | 0 | 0 | — | | |
| Nails, cut clasp, 3in. to 6in. | do. | 9 | 5 | 0 | — | | |
| Do. floor brads .. | do. | 9 | 0 | 0 | — | | |
| Steel, Staffs., Girders and Angles . .. | do. | 5 | 10 | 0 | 6 | 5 | 0 |
| Do. do. Mild bars .. | do. | 6 | 0 | 0 | 6 | 5 | 0 |
| Tin, Foreign .. .. | do. | 125 | 17 | 6 | 126 | 7 | 6 |
| Do. English ingots .. | do. | 129 | 0 | 0 | 131 | 0 | 0 |
| Zinc, sheets, Silesian .. | do. | 23 | 12 | 6 | — | | |
| Do. do. Vielle Montaigne | do. | 23 | 10 | 0 | — | | |
| Do. Spelter .. .. | do. | 21 | 7 | 6 | 21 | 15 | 0 |
| **TIMBER.** | | | | | | | |
| Soft Woods. | | | | | | | |
| Fir, Dantzic and Memel | per load | 1 | 13 | 0 | 3 | 0 | 0 |
| Pine, Quebec, Yellow .. | do. | 5 | 5 | 0 | 6 | 5 | 0 |
| Do. Pitch .. .. | do. | 2 | 11 | 0 | 2 | 16 | 0 |
| Laths, log, Dantzic .. | per fath. | 4 | 10 | 0 | 5 | 10 | 0 |
| Do. Norrkoping .. | per bundle | 0 | 0 | 7¾ | - | | |
| Deals, St. Petersburg, White, 3rd, 2×5 to 3×11 .. .. | per stand. | 6 | 15 | 0 | — | | |
| Do. Kemi. Yellow, 1st and 2nd, 4×12 | do. | 12 | 0 | 0 | — | | |
| Do. do. do. do. 3×9 | do. | 9 | 10 | 0 | — | | |
| Do. do. do. 2nd, 3×9 | do. | 11 | 0 | 0 | — | | |
| Do. do do. 3rd, 4×11 | do. | 6 | 5 | 0 | — | | |
| Do. do. do do. 3×9 | do. | 8 | 0 | 0 | — | | |
| Do. Svoka, Yellow, 3rd, 3×9 | do. | 12 | 0 | 0 | — | | |
| Do. Archangel, Yellow, 2nd, 3×11 | do | 17 | 10 | 0 | — | | |
| Do. do. do. 3rd, 3×9 | do. | 13 | 5 | 0 | — | | |
| Do. do. do. 4th, 3×9 | do. | 9 | 15 | 0 | — | | |
| Do. do. White, 1st, 3×9 | do. | 11 | 10 | 0 | — | | |
| Do. do. do. 2nd, 3×11 | do. | 10 | 15 | 0 | — | | |
| Do. do. do. 3rd, 3×11 | do. | 8 | 15 | 0 | — | | |
| Do. Uleaborg, Yellow, 1st & 2nd, 4×11 | do. | 11 | 0 | 0 | — | | |
| Do. Lovisa, Yellow, Unsorted, 3×9 | do. | 11 | 15 | 0 | — | | |
| Do. Lewisport, White, 1st, 3×9 | do. | 8 | 10 | 0 | — | | |
| Do. do. do. 2nd, 3×9 to 11 | do. | 8 | 0 | 0 | — | | |
| Do. do. do. 3rd, 3×10 to 11 | do. | 7 | 5 | 0 | — | | |
| Do. do. do. 4th, 3×8 & 7 to 3×11 to 12 | do. | 7 | 5 | 0 | — | | |
| Do. do. do. Unsorted, 3×7 to 3 × 10 to 12 | do. | 7 | 10 | 0 | — | | |
| Do. Tornas, Yellow, Unsorted, 3×8 | do. | 8 | 15 | 0 | — | | |
| Do. White Sea Yellow, 3rd, 3×9 | do. | 9 | 15 | 0 | — | | |
| Do. Fiume, White, 1st, 3×8 to 11 | do. | 8 | 0 | 0 | — | | |
| Do. Botwoodville, Bright Pine, 2nd, 3×8 to 10 | do. | 11 | 5 | 0 | — | | |
| Do. Libau, Yellow, 3×8 | do. | 8 | 0 | 0 | — | | |
| Do. do. White, 1st & 2nd, 3×9 to 11 | do. | 7 | 0 | 0 | — | | |
| Do. do. do. 3×9 | do. | 8 | 5 | 0 | — | | |
| Do. Quebec Spruce, White, Unsorted, 3×11 | do. | 9 | 0 | 0 | — | | |
| Battens, all kinds .. | do. | 6 | 10 | 0 | 21 | 15 | 0 |
| Flooring Boards 1in. prepared, 1st .. .. | per square | 0 | 9 | 6 | — | | |
| Do. 2nd .. .. | do. | 0 | 8 | 9 | — | | |
| Do. 3rd, &c. .. .. | do. | 0 | 6 | 6 | 0 | 9 | 0 |
| Hard Woods. | | | | | | | |
| Ash, Quebec .. .. | per load | 3 | 12 | 6 | — | | |
| Birch, St. John, 3½×8 to 15 | do. | 8 | 0 | 0 | — | | |

# Complete List of Contracts Open.

| DATE OF DELIVERY. | WORK TO BE EXECUTED. | FOR WHOM. | FROM WHOM FORMS OF TENDERS MAY BE OBTAINED. |
|---|---|---|---|
| | **BUILDING:** | | |
| Dec. 24 | Marsh, Huddersfield—House | —— | P. Taylor & Co., Architects, Central Buildings, Milnsbridge. |
| " 24 | Rugeley, Staffs—Engine Shed | Urban District Council | W. E. Rogers, Surveyor. Anson Street, Rugeley, Staffs. |
| " 24 | Wingate Grange Colliery, Durham—Cement | Colliery Owners | W. Fleetham. Cashier, Wingate Grange Colliery. |
| " 24 | Exeter—Creche, &c. | H A. Willey | S Churchward, 7 Cowick Street, St. Thomas, Exeter. |
| " 25 | Inverailort. Scotland—Cottage, Dairy, &c. | Mrs. Head | L. & J. Falconer, Architects. Fort William. |
| " 26 | Falkirk, Scotland—Church | Erskine U.F. Church Building Committee. | A. & W. Black, Architects, Falkirk. |
| " 28 | Bradford—Shop, &c. | —— | C. H Hargreaves. Architect, Exchange Buildings, Bradford. |
| " 28 | Cheriton. Kent—Underground Convenience | Urban District Council | A. Atkinson. Clerk, Public Offices, Cheriton, Kent. |
| " 28 | Lochmaddy, Scotland—Alterations, &c, to School | North Uist School Board | R. F. Mathieson, Claddach, Kirkibost, Lochmaddy. |
| " 28 | Stanley, Durham—Twenty-four Houses | Urban District Council | W. Foster, Architect, Front Street. Stanley. |
| " 28 | Lancaster—Assembly Hall and Classrooms | Society of Friends | S. E. Barrow, Architect, Liverpool Bank Chambers, Lancaster. |
| " 28 | Bradwell-on-Sea—Six Workmen's Cottages | Maldon Rural District Council | H. G. Keywood, 6 Market Hill, Maldon, Essex. |
| " 28 | New Maldon, Surrey—Cottage Homes | Kingston Guardians | W. H. Hope, Architect, Seymour Road, Hampton Wick. |
| " 28 | Miskin, Mountain Ash—Chapel | Trustees | T. W. Miller, Architect, Mountain Ash. |
| " 28 | Miskin, Mountain Ash—Ninety-nine Houses | Building Club | T. W. Miller, Architect, Mountain Ash. |
| " 29 | Salford—Taking down House, &c. | Tramways Committee | Borough Engineer, Town Hall, Salford. |
| " 29 | Cardiff—Government Offices | Commissioners of H.M. Works, &c. | Secretary, H.M. Office of Works, Storey's Gate, London, S.W. |
| " 30 | Horsham, Sussex—Stabling, &c. | Urban District Council | S. Mitchell. 14 Market Square, Horsham. |
| " 30 | Beaumaris—Subway, &c. | Board of Guarantors | R. Lloyd, Pier Gates. Beaumaris. |
| " 30 | Farnham—Workhouse Wards | Guardians | Friend & Lloyd, Architects, Grosvenor Road, Aldershot. |
| " 30 | Woking, Surrey—Underground Convenience | Urban District Council | G. J. Wooldridge, Surveyor, Bank Chambers, Woking. |
| " 30 | Glasgow—Free Library | Corporation | J. Ritchie, 183 West Regent Street, Glasgow. |
| " 31 | Fishguard—Kitchen and Laboratory | County School Governors | G. Morris, Clerk to Governors, High Street, Fishguard. |
| " 31 | Ashburton, Devon—Alterations, &c., to Lent Hall | R. Dawson | F. W. Vanstowe, Architect, Palace Chambers, Paignton. |
| " 31 | Stafford—Nurses' Home, &c | Guardians | H. T. Sandy, Architect, Stafford. |
| " 31 | Hillsborough, co. Down, Ireland—Two Villas | —— | H. Hobart, Architect, Dromore, co. Down. |
| " 31 | Devonport—Buildings | Corporation | S. E. Stevenson, Engineer, Gas Works, Devonport. |
| 1904.<br>Jan. 1 | Londonderry—Six Houses | F. A. Gay | J. M. Robinson, 7 East Wall, Londonderry. |
| " 1 | Herne Bay, Kent—Coastguard Station | Admiralty | Director of Works Dept., Admiralty, 21 Northumberland Av., W.C. |
| " 1 | Pontardawe—Chapel | —— | G. P. Davies, Architect, Station Road, Port Talbot. |
| " 1 | Lynton—Church | —— | Rev. W. E. Cox. Lynton Rectory. |
| " 2 | Dublin—Laboratory and Lecture Theatre | —— | Training College, Marlborough Street, Dublin. |
| " 4 | Lurgan, Ireland—Free Library | Urban Council | F. W. Pollock, Clerk, Town Hall, Lurgan. |
| " 4 | Neath—Roofs, Market Alterations, &c. | Corporation | D. M. Jenkins, Borough Engineer, Gwyn Hall. Neath. |
| " 4 | Hounslow—Public Offices. Baths and Library | Heston and Isleworth U.D.C. | N. Parr & A. E. Kates, Architects, Brunswick House, Brentford, W. |
| 4 | Newburn, Northumberland—Bridge Widening | Urban District Council | T. Gregory, Surveyor, Council Offices, Newburn. |
| " 4 | Tonypandy. Wales—Extension of Hall, &c. | —— | R. S. Griffiths, Architect. Excelsior Buildings, Tonypandy. |
| " 4 | Southampton—Schools | Corporation | Borough Engineer, 123 High Street, Southampton. |
| " 4 | Gillingham, Kent—School | Borough Council Education Committee. | E. T. Atchison, 8 Waterloo Road, New Brompton, Gillingham. |
| " 5 | Whitehaven—Church | —— | J. S. Moffat, 53 Church Street, Whitehaven. |
| " 5 | St. Austell, Cornwall—Goods Shed | Great Western Railway Co. | Engineer, Plymouth Station. |
| " 6 | Leytonstone, N.E.—Lunatic Wards | West Ham Guardians | F. E. Hilleary, Clerk, Union Workhouse, Leytonstone, N.E. |
| " 11 | East Ham—Library | Urban District Council | A. H. Campbell, Engineer. Town Hall, East Ham. |
| " 12 | Paddington—Extension of Workhouse | Guardians | F. J. Smith, Architect, Parliament Mansions, Victoria Street, S.W. |
| " 18 | London, S.E.—Lime. Cement, &c. | Camberwell Borough Council | W. Oxtoby. Borough Engineer. Town Hall, Camberwell, S.E. |
| Feb 1 | Sunderland—Additions, &c., to Hall | Corporation | J Eltringham 62 John Street, Sunderland. |
| No date | Canterbury—Ward and Alterations, &c., to Hospital | —— | W. J. Jennings, 4 St. Margaret's Street, Canterbury. |
| " | North Kensington—Printing Works | Lane Brothers, Ltd. | W. Daniell, 61 Lydford Road, Paddington, W. |
| " | Westminster, S.W.—Office Building | —— | Palgrave & Co, 28 Victoria Street, S.W. |
| | **ENGINEERING:** | | |
| Dec. 24 | Birkenhead—Laundry Machinery, &c. | Corporation | C. Brownridge, Borough Engineer, Town Hall, Birkenhead. |
| " 24 | Rugeley—Trenches, &c. | Urban District Council | W. E. Rogers, Surveyor, Council Offices, Anson Street, Rugeley. |
| " 24 | Pontypridd—Electric Tramcars, &c. | Urban District Council | R. P. Wilson, 66 Victoria Street, Westminster. |
| " 26 | Plasencia, Spain—Electrict Lighting of Town | —— | Secretariat of the Municipality, Plasencia, Spain. |
| " 28 | Govan, Scotland—Electric Capstan, &c. | Corporation | T. C. Parsons, Burgh Electrical Engineer, Helen Street, Govan. |
| " 28 | Grangemouth, Scotland—Coal-hoists Viaducts | Caledonian Railway Co. | Sir J. W. Barry, 21 Delahay Street, Westminster. |
| " 28 | Manchester—Diverting and Culverting Brook | Highways Committee | City Surveyor, Town Hall, Manchester. |
| " 29 | Hunstanton—Boiler | Urban District Council | J. S. B. Glasier, Clerk, New Hunstanton. |
| " 30 | Nenagh, Ireland—Roadmaking Machinery | Tipperary County Council | County Surveyor, Court House, Nenagh. |
| " 30 | Palermo—Steam Flour Mill, &c. | —— | Commercial Intelligence Branch, Board of Trade, 50 Parliament Street, S.W. |
| " 30 | Sydney, New South Wales—Telegraph, Telephone & Electric Light Material, &c. | General Post Office | General Post Offices, Sydney, Melbourne, Brisbane, Adelaide Hobart and Perth. |
| " 30 | Shrewsbury and Birkenhead—Bridges | London & North-Western and Great Western Joint Railways. | Joint Engineer, Woodside Station, Birkenhead. |
| " 31 | Epsom—Pumping Plant | Urban District Council | E. R. Capon, Bromley Hurst, Church Street, Epsom. |
| " 31 | Rotherham—Lift | Sewerage Works Committee | R. E. W. Berrington, Engineer, Bank Buildings, Wolverhampton. |
| " 31 | Hadleigh, Suffolk—Borehole | Urban District Council | T. F. Corder, Surveyor, High Street, Hadleigh |
| " 31 | Rotherham—Bacteriological Filters | Sewerage Works Committee | R. E. W. Berrington, Engineer, Bank Buildings, Wolverhampton. |
| 1904.<br>Jan. 1 | Cheshunt—Filtering Tank and Sludge Beds | Urban District Council | A. C. Lee, Clerk, Manor House, Chesham. |
| " 1 | Long Eaton—Electric Plant | Urban District Council | F. Worrall. Engineer, Electricity Supply Works, Long Eaton. |
| " 4 | Dublin—Bridges | Gt. Northern Rly. Co. (Ireland) | W. H. Mills, Engineer-in-Chief, Amiens Street, Dublin. |
| " 4 | London, N.E.—Mains | Hackney Borough Council | R. Hammond, 64 Victoria Street, Westminster, S.W. |
| " 4 | Buntingford, Herts—Well | Rural District Council | J. Chadwick, Engineer, Bletchley Bucks. |
| " 6 | St. Monans, Scotland—Harbour Works | —— | D. & C. Stevenson, 84 George Street, Edinburgh. |
| " 6 | Aberdeen—Timber Wharf. &c. | Harbour Commissioners | R. G. Nichol, Engineer, Aberdeen. |
| " 8 | Calcutta—Disc Water Meters | Corporation | Assistant Engineer, Corporation Water Works, 3 Municipal Office Street, Calcutta. |
| " 8 | Carshalton, Surrey—Hot-water Apparatus | Metropolitan Asylums Board | T. D. Mann, Clerk, Board's Offices, Embankment, E.C. |
| " 11 | London, S.E.—Repairing front of Wharf | Metropolitan Asylums Board | Secretary, Metropolitan Asylums Board, Embankment, E.C. |
| " 12 | Sydney, New South Wales—Electrical Plant and Machinery | Municipal Council | Preece & Cardew, 8 Queen Anne's Gate, Westminster, S.W. |
| " 12 | London, W.—Two Iron Fire Escape Staircases | Paddington Guardians | E. H. Sim, 8 Craig's Court, Charing Cross, W.C. |
| " 15 | Spain—Bridge over River Tuerto | Ministry of Public Works | Commercial Intelligence Branch, B. of Trade, 50 Parliament St. S.W |
| " 16 | Egremont, Cheshire—Cables | Wallasey U.D.C. | J. A. Crowther, Electric Supply Works, Sea View Road, Liscard. |
| " 19 | Rotherhithe and Radcliff—Footway Tunnel | London County Council | Engineer's Department, County Hall, Spring Gardens, S.W. |
| " 19 | Greenwich—Pumps | London County Council | County Hall, Spring Gardens, S.W. |
| " 19 | London—Tunnel | London County Council | Engineer's Department, County Hall, Spring Gardens, S.W. |
| | **FURNITURE:** | | |
| Dec. 26 | Felling, Durham—Furniture, &c. | Education Committee | G. Bolan, Clerk, Council Buildings, Felling. |
| | **IRON AND STEEL:** | | |
| Dec. 24 | Garforth Colliery, near Leeds—Stores | Colliery Owners | Owners of Garforth Colliery, near Leeds. |
| " 24 | Wingate Grange Colliery, Durham—Stores | Colliery Owners | W. Fleetham, Cashier, Wingate Grange Colliery. |
| " 28 | Exmouth—Railing and Gates | Urban District Council | S. Hutton, Surveyor, Public Hall Chambers, Exmouth. |
| " 30 | Oxford—Stores | Corporation | City Engineer, Town Hall, Oxford. |
| " 30 | Amsterdam—Iron Gates and Sewer Valves in Lock | Zealand Provincial Government | Head Engineer, Bekaar, Middelburgh. |
| 1904.<br>Jan. 5 | King's Lynn—Stores | Corporation | H. J. Weaver Borough Engineer, Town Hall, King's Lynn. |
| " 5 | Bury, Lancs—Iron Castings | Joint Water Board | R. B. Rigby, Waterworks Manager, Parsons Lane, Bury. |
| " 7 | Earlsheaton, Dewsbury—Pipes | Soothill Nether U.D.C. | J. H. Ward, Surveyor, Earlsheaton, Dewsbury. |
| " 18 | London, S.E.—Stores | Camberwell Borough Council | W. Oxtoby, Borough Engineer, Town Hall, Camberwell, S.E. |
| | **PAINTING AND PLUMBING:** | | |
| Dec. 26 | Edinburgh—Oils, Varnishes, Paints, &c. | Royal Edinburgh Asylum | Mr. Gray, Steward, Royal Asylum, Edinburgh. |
| " 29 | London, S.W.—Paints and Oils, &c. | Wandsworth & Clapham Gdns. | F. W. Piper, Clerk, St. John's Hill, Wandsworth, S.W. |
| " 30 | Oxford—Oils and Paints | Corporation | City Engineer, Town Hall, Oxford. |

# Complete List of Contracts Open —*continued.*

| DATE OF DELIVERY. | WORK TO BE EXECUTED. | FOR WHOM. | FROM WHOM FORMS OF TENDERS MAY BE OBTAINED. |
|---|---|---|---|
| | **ROADS AND CARTAGE:** | | |
| Dec. 24 | Erdington, Birmingham—Making-up, &c. | Urban District Council | H. H. Humphries, Surveyor, Public Hall, Erdington, Birmingham. |
| „ 28 | Droylsden, Lancs—Street Works | Urban District Council | C. Hall 10 Ashton Road, Droylsden |
| „ 29 | Hazel Grove, near Stockport—Team Labour | Urban District Council | G. S. Doncaster, Surveyor, Council Offices, Hazel Grove. |
| „ 29 | West Hartlepool—Street Construction | Corporation | J. W. Brown. Borough Engineer. Town Hall, West Hartlepool. |
| 29 | Bootle, Lancs Improvement Works | Corporation | Borough Engineer, Town Hall. Bootle. Lancs. |
| „ 29 | Eastbourne—Private Improvement Works | Corporation | D. J. Bowe, Borough Surveyor. Town Hall, Eastbourne. |
| „ 31 | Horsham, Sussex—Materials | Roads and Bridges Committee | W. McIntosh, County Surveyor, Worthing Road, Horsham. |
| „ 31 | London, S.E.—Private Street Works | Penge U.D.C | H. W. Longdin, Surveyor, Town Hall, Anerley, S.E. |
| 1904. Jan. 1 | Wealdstone—Private Street Improvements | Urban District Council | H. Walker, Surveyor. Council Offices. Wealdstone. |
| „ 1 | Kelloe, Durham—Forming, &c., Streets | Coxhoe Parish Council | M. H. Seymour. Clerk, Main Street Kelloe. |
| „ 1 | Jersey—Wood-paving | Council | H. Le Masurier, Town Hall, Jersey. |
| „ 4 | Warrington—Forming. &c. | Paving and Sewerage Committee | Borough Surveyor, Town Hall, Warrington |
| „ 4 | Carmarthen—Broken Granite, &c. | County Council | C. H. Mounsey, County Surveyor, Carmarthen. |
| „ 11 | Dartford—Making-up Private Streets | Rural District Council | W. Harston, 8 Hythe Street, Dartford. |
| „ 18 | London S.E.—Granite, &c. | Camberwell Borough Council | W. Oxtoby, Borough Engineer, Town Hall, Camberwell S.E. |
| „ 19 | Rotherhithe and Radcliffe—Carriageway | London County Council | Engineer's Department, County Hall, Spring Gardens, S W. |
| | **SANITARY:** | | |
| Dec. 26 | Stanley, Durham—Sewage-disposal Works | Urban District Council | J. Routledge, Council Surveyor, Front Street, Stanley. |
| „ 28 | Bedford—Sewer | Corporation | Mr. Greenshields. Borough Engineer, Town Hall, Bedford. |
| 30 | Oxford—Disinfectants | Corporation | City Engineer, Town Hall, Oxford. |
| „ 31 | Lindfield, Sussex—Sewer | Cupfield R.D.C. | Mr. Beach, Surveyor, Council Offices, Hayward's Heath |
| „ 31 | Bexley Heath, Kent—Sewers, &c. | Urban District Council | W. J. Lomax, 11 Fold Street, Bolton. |
| 1904. Jan. 1 | Walmer. Kent—Sewerage Works | Urban District Council | Beesley. Son & Nichols. 11 Victoria Street, Westminster, S.W. |
| „ 1 | Cheshunt, Middlesex—Sewage-disposal Works | Urban District Council | Clerk. Council Offices Manor House, Cheshunt. |
| „ 2 | Burton-upon-Trent—Sewerage Works | Corporation | G. T. Lynam, Borough Engineer. Town Hall, Burton-upon-Trent. |
| „ 4 | Coalville, Leics—Sewers, &c. | Urban District Council | J. B. Everard 6 Millston Lane, Leicester. |
| „ 4 | Middlesbrough—Sewer | Sanitary Committee | F. Baker, Borough Engineer, Municipal Buildings, Middlesbrough. |
| „ 5 | Bexton, near Knutsford—Sewer, &c. | Bucklow R.D.C. | J. M. D. M'Kenzie, 7 Market Street, Altrincham |
| „ 5 | King's Lynn—Stoneware Pipes, Disinfectants, &s. | Corporation | H. J. Weaver, Borough Surveyor, Town Hall, King's Lynn. |
| „ 11 | Hambledon, Guildford—Scavenging | Rural District Council | F. Smallpiece. 138 High Street. Guildford. |
| „ 13 | Tooting, S.W.—Drainage Works | Metropolitan Asylums Board | A. & C. Harston, 15 Leadenhall Street, E.C. |
| „ 19 | London, S.E.—Stoneware Drain Pipes, &c. | Camberwell Borough Council | W. Oxtoby, Borough Engineer, Town Hall, Camberwell, S.E. |
| | **TIMBER:** | | |
| Dec. 24 | Wingate Grange Colliery, Durham—Timber | Colliery Owners | W. Fleetham, Cashier. Wingate Grange Colliery, Durham. |
| „ 24 | Garforth Colliery, near Leeds—Timber | Colliery Owners | Owners of Garforth Colliery, near Leeds. |
| „ 26 | Edinburgh—Timber | Royal Edinburgh Asylum | Mr. Gray. Steward, Royal Asylum, Edinburgh. |
| „ 29 | Worthing, Sussex—Timber | Corporation | Borough Surveyor, Municipal Offices, Worthing. |
| „ 29 | London, S.W.—Timber | Wandsworth & Clapham Gdns. | F. W. Piper, Clerk, St. John's Hill, Wandsworth, S W. |
| „ 30 | Oxford—Timber | Corporation | City Engineer, Town Hall, Oxford. |
| 1904. Jan. 5 | King's Lynn—Timber | Corporation | H. J. Weaver, Borough Surveyor, Town Hall, King's Lynn. |
| „ 15 | Cape Town—Timber | Government Rly. Department | Railway Stores, Cape Town. |
| „ 18 | London, S.E.—Timber | Camberwell Borough Council | W. Oxtoby, Borough Engineer, Town Hall, Camberwell, S.E. |
| Dec. 1 | Natal—Sleepers | Government of Natal | Agent-General for Natal, Natal Government Agency, 26 Victoria Street, Westminster. |

# List of Competitions Open.

| DATE OF DELIVERY. | DESIGNS REQUIRED. | AMOUNT OF PREMIUM. | DEPOSIT REQUIRED FOR CONDITIONS, &C. | BY WHOM ADVERTISED. |
|---|---|---|---|---|
| Dec. 30 | Ellesmere—Sewage-disposal Scheme | — | — | R. E. Lloyd, Clerk, Ellesmere. |
| 1904. Jan. 15 | Windsor—Police and Fire Brigade Stations | £26 5s. | £1. | E. A. Stickland, Borough Surveyor, Town Council Offices, Windsor. |
| „ 20 | Wakefield—Public Library | — | — | C. J. Hudson, Town Clerk, Town Hall, Wakefield. |
| „ 31 | Borstal, Rochester—Chancel, Organ Chamber, &c. | — | — | —— Borstal Vicarage, Rochester. |
| Feb. 1 | Ilkley—Free Library &c. | £100, £50, £20. | £1 1s. | F. Hall, Clerk, Council Offices, Ilkley. |
| „ 1 | Erdington—New Council House & Free Library | £50, £30, £20. | £1 1s. | H. H. Humphries, District Engineer, Public Hall, Erdington, Birmingham. |
| „ 1 | Sevenoaks—Public Library | — | — | H. J. Thompson, Clerk, Council Offices, Argyle Road, Sevenoaks |
| Mar. 31 | Vienna—Machinery to Lift Boats on Canal | 100,000, 75,000 & 50,000 kronen. | — | Austro-Hungarian Consulate-General, 22 Laurence Pountney Lane, E.C. |
| No date | Torquay—Public Library | £52 10s., £31 10s. | — | F. S. Hex, Town Clerk, Town Hall, Torquay. |

# Bankruptcies.

**[Abbreviations: R.O.—receiving order; P.E.—public examination; C.C.—county court; O.R.—official receiver; Adj.—Adjudication.]**

DURING THE WEEK ending Dec. 18th twenty-two failures in the building and timber trades in England and Wales were gazetted.

H. GIBSON, surveyor, St. Albans. R.O. Dec. 9th.

P. G. VAN, engineer, Sowerby Bridge. R.O. Dec. 11th.

F. KIRKHAM, painter, Heaton Norris. R.O. Dec. 1st.

CAPON & CO., builders, Ilford. R.O. Dec 7th.

H. A. JACKSON, engineer, Shipley. R.O. Dec. 11th.

J. W. STORR, electrical engineer, Dudley. Adj. Dec. 7th.

F. W. BLACKBURN, builder and contractor, Blackpool. Adj. April 22nd.

C. HENN, junior, builder, Barking. R.O. Nov. 30th. P.E., Chelmsford Shirehall, Jan. 6th, at 10.

W. HOPWOOD, builder and contractor, St. Anne's-on-Sea. R.O. Dec. 7th.

W. GERRING, builder, Hanwell. P.E., Brentford Town Hall, Jan. 15th, at 2.

VOLLER & GOODFELLOW, builders and contractors, Wood Green. R.O. Dec. 5th.

C. CURD & SON, builders and contractors, Putney. R.O. Dec. 10th.

BUTLER & YORKE, builders and contractors, Brighton. R.O. Dec. 2nd P.E., Brighton C.C., Jan. 7th, at 11.

S. J. DUNCAN, builder, Stairfoot, near Barnsley. R.O. Dec. 7th.

C. C. LLOYD, architect and surveyor, Halifax. R.O. Dec. 8th. P.E., Halifax C.C., Jan. 11th, at 2.

T. STANSFIELD, builder and contractor, Charlestown Hill, near Hebden. R.O. Dec. 9th.

E. WALDEN, builder. Hurst, near Twyford. R.O. Nov. 28th. P.E., Reading Assize Courts, Jan. 14th, at 2.

J. W. BARTLETT, building contractor, Ystrad Rhondda. R.O. Dec. 7th.

S. MARRIOTT, builder and contractor, Woodville. P.E., Burton-on-Trent C.C., Jan. 20th, at 12.

J. C. ELSTOB, joiner and builder, Houghton-le-Spring. P.E., Durham C.C., Dec. 22nd, at 10.40.

W. & N. STEPHENS, builders, Earlstown. P.E., Warrington C.C., Jan 8th, at 11.

W. GUYATT, builder and contractor, London, N. R.O. Dec. 2nd.

J. V. TAAFFE & EVENS, timber merchants, London, E.C. Adj. Dec. 3rd.

J. TIBBIT, carpenter, painter and decorator, Brighton. R.O. Dec. 4th.

W. H. SIMMONS, painter, Birmingham. P.E., Birmingham C.C., Jan. 14th, at 12.

J H. LEE, contractor, Mirfield. R.O. Dec. 3rd. P.E., Dewsbury C.C., Jan. 5th, at 2.

J. THORNTON, joiner and contractor, Rotherham. P.E., Sheffield C.C., Jan. 14th, at 2.

T. MOSLEY, builder, Leicester. Gross liabilities £5.484; deficiency £449

C. CLARK, builder, Folkestone. R.O. Nov. 30th. First meeting, O.R.'s, Canterbury, Dec. 17th, at 9.15. P.E., Canterbury Guildhall, Dec. 17th, at 10.

W. DOBBIE, builder, Hastings. R.O. Dec. 1st. First meeting, Hastings C.C, Dec. 31st, at 12. P.E, Hastings Town Hall, Jan. 12th, at 12

J. SMITH, builder, Birmingham. R.O. Dec. 1st. First meeting, 174, Corporation Street, Birmingham, Dec. 21st, at 11 P.E., Birmingham C.C.. Jan. 14th, at 2.

R. H. PARKYN, builder, Newport, Mon. Gross liabilities £3,625; £1,104 expected to rank for dividend; deficiency £271.

C. C. LLOYD, architect and surveyor, Halifax. Liabilities. £2,520; assets £2,159; deficiency £361.

BANKS'S FIREPROOF CONSTRUCTION SYNDICATE, LTD. Liabilities £11,781; £9 990 expected to rank; assets £1,790.

The following companies are to be wound up:—

BLOOMFIELD & STOURBRIDGE BLUE AND RED BRICK CO., LTD. C. E. Bullock, Albion Street, Hanley, liquidator.

DIAMOND WALL CEMENT CO., LTD. Meeting at 8, Cook Street, Liverpool, Dec. 15th, at 12.

# New Companies.

TUDORS, MASH & CO., LTD., manufacturers and dealers in builders' and decorators' materials, 21, Hindon Street and 29A, Gillingham Street, Pimlico, S.W., 98, High Street, 2 and 5, Pratt Street, and 5 and 6, Pratt Mews, Camden Town, and 17, College Hill, E.C. Capital: £6,000 in £1 shares.

FESTINIOG SLATE QUARRIES, LTD., Cynfal Valley, Festiniog, Merionethshire. Capital: £10,000 in £1 shares.

LONDON AND DISTRICT WESTRUMITE CO., LTD, merchants, blenders, manufacturers and refiners of oils. Dacre House, Victoria Street, S.W. Capital: £50,000 in £1 shares.

DALTON BUILDING CO., LTD, land and property owners. Capital: £15,000 in £10 shares.

JOHN H. FULLER & CO., LTD., oil and colour merchants, colour grinders, varnish and enamel manufacturers, &c., 52, Minster Road, Reading. Capital: £15,000 in £1 shares.

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ADVERTISER: 45, F.R.I.B.A., late Executive Engineer, Public Works Home and Colonial experience. Accept nominal salary to resume home work.—A., 21, Nemoure Road, Acton.

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AN ARCHITECT is willing to assist others with designing working drawings from rough sketches, details, furniture delapidations, and superintending works, &c., at own office.—FRANK CATLING, 3, Featherstone Buildings, Holborn, W.C.

ARCHITECT'S ASSISTANT, six years' experience, requires engagement. Contract drawings, details, &c. Surveying, assistance with quantities. Box 2635, BUILDERS' JOURNAL Office, 6, Great New St., Fetter Lane, E.C.

ARCHITECT'S ASSISTANT (23), 6 years' experience, seeks re-engagement. Working drawings, details, perspectives, measuring up, knowledge of quantities. Good references.—Box 2700, BUILDERS' JOURNAL Office, 6, Great New Street, Fetter Lane, E.C.

ARCHITECT'S ASSISTANT desires engagement, London district preferred; 5½ years' experience. Contract Drawings, Details, Specifications, knowledge of Quantities, Surveying and Levelling. Good references.—Box 2690, BUILDERS' JOURNAL Office, 6, Great New Street, Fetter Lane, E.C.

ARCHITECT'S ASSISTANT desires situation as IMPROVER in good Office; Country or Town; Home Counties preferred. Neat and careful draughtsman. Good references.—J. D., Cade House, West Malling, Kent.

ARCHITECT'S ASSISTANT (22½) desires engagement. Good draughtsman, well up in working drawings and details, and measuring up. Moderate salary.—Box 2645, BUILDERS' JOURNAL Office, 6, Great New Street, Fetter Lane, E.C.

ARCHITECT'S ASSISTANT (29) desires ENGAGEMENT; 10 years' experience; good draughtsman and colourist; well up in working drawings. details, surveying; good references; moderate salary.—A. RANDALL. Hazelmere, Rusham Road, Egham.

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ARCHITECT'S ASSISTANT desires APPOINTMENT in London office; 5 years' varied experience (2½ years Technical School - practical work—and 2½ years articles); good draughtsman; knowledge of surveying; salary a secondary consideration; highest credentials, and undeniable references; life abstainer.—Box 2655, BUILDERS' JOURNAL Office, 6, Great New Street, Fetter Lane, E.C.

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ARCHITECT'S and SURVEYOR'S ASSISTANT desires ENGAGEMENT; Midlands preferred; general experience (gentleman); moderate salary.—Apply Box 2643, BUILDERS' JOURNAL Office, 6, Great New Street, Fetter Lane, E.C.

ARCHITECT'S and SURVEYOR'S ASSISTANT desires Re-engagement; six years' London and country practical experience; designs, working drawings. specifications, &c., and surveying; excellent testimonials.—C. D., 30, Beaumont Street, W.

ARCHITECT'S & SURVEYOR'S JUNIOR ASSISTANT desires Engagement (22½), 5½ years' experience. Working drawings, details and levelling. Salary moderate.—Box 2674, BUILDERS' JOURNAL Office, 6, Great New Street, Fetter Lane, E.C.

ARCHITECT'S JUNIOR ASSISTANT desires situation in a Birmingham office; 5½ years' good experience in well-known office. Contract, Plans, Specifications, Details, &c., good draughtsman.—Box 2668, BUILDERS' JOURNAL Office, 6, Great New Street, Fetter Lane, E.C.

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BRICKWORK or POINTING WANTED by competent man. Any quantity, at most reasonable prices.—Apply W. S., Burlington Place, Woodford Wells, Essex.

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**OFFICE: 6, GREAT NEW STREET, FETTER LANE, E.C.**

# Coming Events.

**Saturday, January 2.**
Sanitary Inspectors' Association.—President's New Year's Address at 6 p.m.

**Monday, January 4.**
Royal Institute of British Architects—Business Meeting at 8 p.m.

**Wednesday. January 6.**
Northern Architectural Association.—Students' Evening.
Architectural Association (Discussion Section and Camera and Cycling Club Joint Meeting).—Debate on "Sketching and Photography," at 7.30 p.m

**Friday, January 8.**
Architectural Association.—Mr. Hugh Stannus, F.R.I.B.A., on "Egyptian Architecture." at 7.30 p.m.
Birmingham Architectural Association.—Mr. J. A. Gotch on "Domestic Architecture from the Conquest."

**Saturday, January 9.**
Glasgow Technical College Scientific Society.—Alex. G. Strathern, M.I.M.E., on "The Manufacture of Weldless Chains," at 7.30 p.m.

**Monday, January 11.**
Surveyors' Institution.—Discussion on Mr. Herbert T. Scoble's paper on "Industrial Decentralization, an Important Factor in the Solution of the Housing Problem," at 8 p.m

**Tuesday, January 12.**
Architectural Association of Ireland.—Mr. G. P Sheridan on "An Architectural Ramble in the North of France" at 8 p.m.

**Wednesday, January 13.**
Northern Architectural Association.—Mr. T. J. Gueritte on "Reinforced Concrete and its Applications," at 7.30 p.m.
Edinburgh Architectural Association.—Lantern Night at 8 p.m.
Glasgow Architectural Association.—Prof. Beresford Pite, F.R.I.B.A., on "Architecture, Registered or Free," at 8 p m.
Surveyors' Institution.—Students' Preliminary Examination

**Thursday, January 14.**
Surveyors' Institution.—Students' Preliminary Examination.
Leeds and Yorkshire Architectural Society.—Annual Dinner, Queen's Hotel, Leeds, at 7 p.m

**Friday, January 15.**
Glasgow Technical College Architectural Craftsmen's Society.—Mr. C. R. Bonn, M.I.C.E., on "Steel Work Construction," at 8 p.m.
Institution of Mechanical Engineers.—Ordinary Meeting at 8 p.m.
City of London College Science Society—Mr. W. H. Booth on "Notes on Liquid Fuel." at 8 p.m.

**Monday, January 18.**
Royal Institute of British Architects.—Mr. J. Starkie Gardner on "Architecture in Lead" at 8 p.m.
Surveyors' Institution.—Junior Meeting at 7 p.m

The new Grand Stand at Goodwood has been commenced; it will be finished in ample time for the next meeting. The stand will be chiefly of iron and concrete, faced with red bricks and white stone. Mr. W. Wallis, of Littlehampton and Balham, is the builder; tender £30,000.

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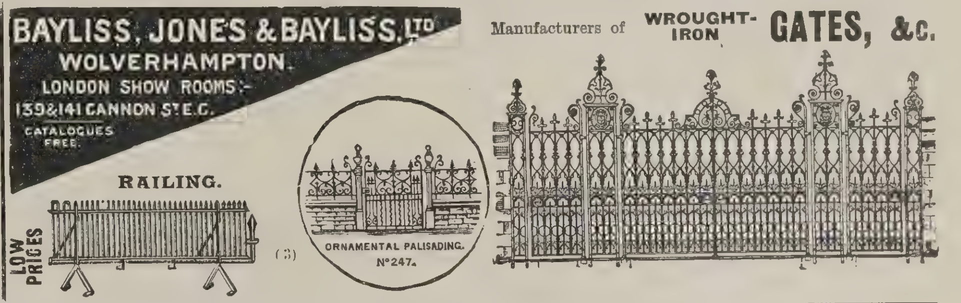
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# THE
# BUILDERS' JOURNAL
## AND ARCHITECTURAL RECORD.

December 30, 1903 Vol. 18, No. 464. 6, Great New Street, Fetter Lane, E.C.

## Summary.

Another list of standard sections for beams has been issued. (Page 288.)

Mr. G. C. Ashlin, in his presidential address to the Royal Institute of Architects of Ireland, spoke strongly in favour of architects' registration, and said that the profession in Ireland was practically unanimous about its desirability. (Page 293.)

Sir Henry Burdett says the sites of the London hospitals represent the best and worst features of hospitals in densely-crowded neighbourhoods. Sites should provide at least 300ft. super., or, to meet modern hygienic requirements, 450ft. super. per bed. St. George's provides 191ft.; the Westminster, 134ft.; the Royal Free, 253ft.; the Middlesex, 267ft.; St. Mary's, 136ft.; Charing Cross, 86ft.; University College, 160ft.; the London, 310ft.; Guy's, 364ft.; St. Thomas's, 652ft.; and "Bart's," 300ft., or with additional land recently purchased, 420ft. The Mansion House Committee propose to spend £350,000 on erecting new buildings at "Bart's," which, Sir Henry says, would render the old wards double-backed and terribly faulty, and would reduce this great institution of 700 beds to the second rank of general hospitals; whereas if an additional acre and a half of land were secured "Bart's" could be converted into the finest general hospital in the metropolis. (Page 292.)

The Caledonian Railway Station Hotel at Edinburgh has been opened. (Page 286.)

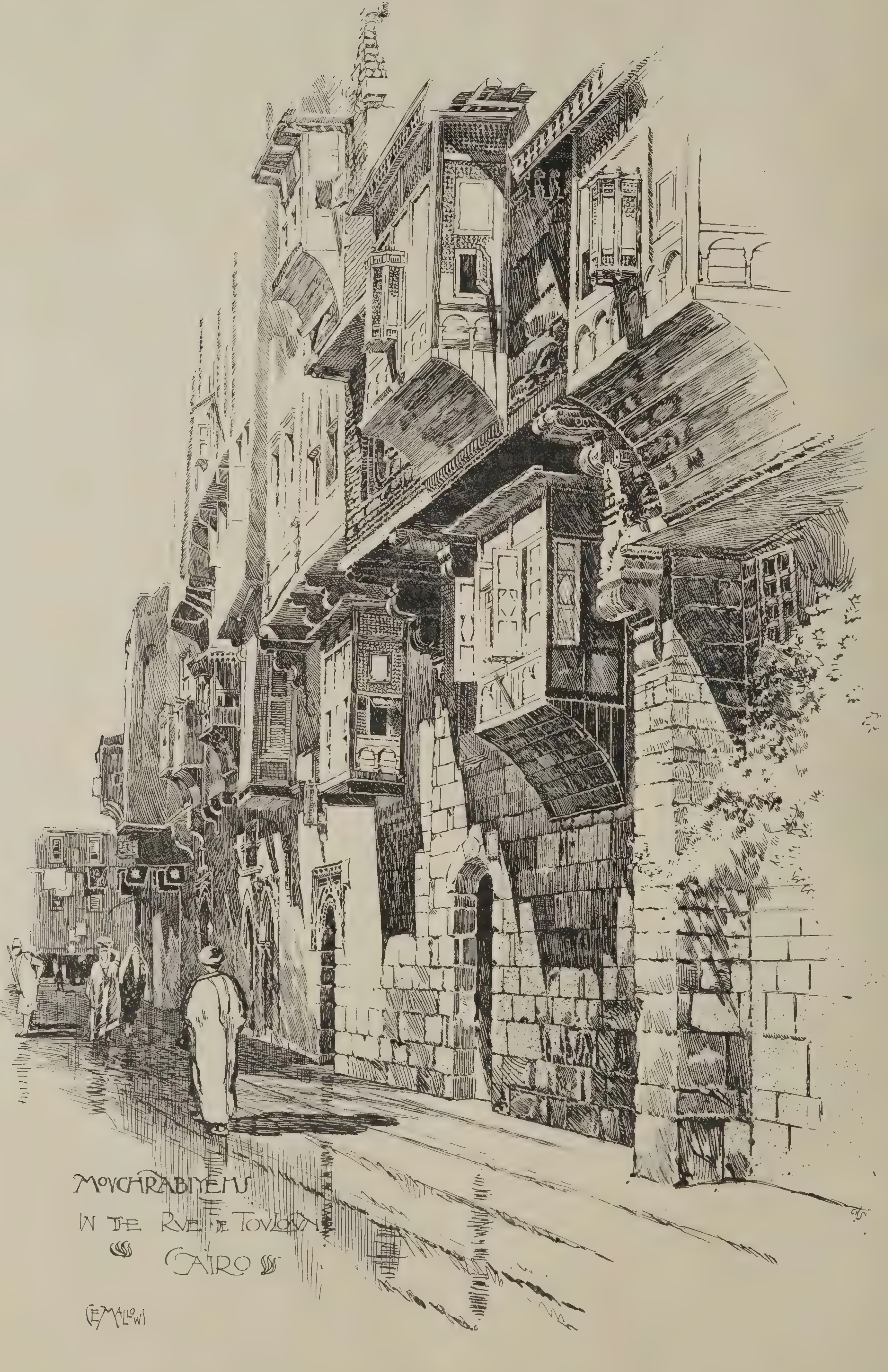
Flats for the working classes have been built in Birmingham. They are comprised in two blocks of four-storey buildings, representing sixty houses—twenty-eight of three rooms, sixteen of two rooms and sixteen of one room: the rent being 5s., 4s. 3d. and 3s. a week respectively. (Page 286.)

In a lecture on Sir Christopher Wren which he delivered before the Leeds and Yorkshire Architectural Society, Mr. Mitchell Withers said that perhaps the only wise thing the Commissioners of St. Paul's did in treating with Wren was when, at the commencement of the undertaking, they told him to submit a design for a cathedral which he thought suitable to the site and worthy of the position, and that they would then have to see about the money. Wren's idea of an unobstructed view from one end of the cathedral to the other was frustrated by the building of the organ; his desire for mosaics in the dome set aside by the employment of Sir John Thornhill; and the balustrade erected in absolute variance with his wishes. (Page 302.)

The half-yearly report of the L.C.C. Works Department is unusually favourable. In almost every case there is a balance of cost below the final certificate. The Fire Brigade, Highways and Main Drainage Committees all report satisfactorily on the work done for them. (This page.)

**Our Doors and Staircases.** THE stranger who revisits London after an absence of a few years cannot fail to be struck with the great increase in the use of glass. It is observable not only in shops where the lowest storey is rapidly disappearing—the second storey in some cases being on the eve of following it—but in private residences where glass has begun to replace the upper panels of the street doors; a fashion which has spread to London from France, the glass being sometimes protected by a light flowing design of iron openwork. A great variety of light colour is now employed to paint the woodwork, a rather conspicuous red appearing quite frequently. In the suburbs the colour is more marked and the use of glass proportionately greater; not the upper panels only, but the lower are filled in this manner, and usually without ironwork; the "fanlight" is merely an expression for a wide sheet of glass occupying the whole space above the door; glass again appears on either side of it, and in many new building neighbourhoods "the front door," that formal barrier of the Englishman's castle, is becoming a thing of the past. Coloured glass is largely used, and in the evening, with the brilliant lights now in vogue, the effect is very striking. Bevelled glass, too, has made its appearance and is often displayed in a "bull's-eye" window. The total effect of these changes, whilst adding to the light and cheerfulness of a "villa residence," is to give a certain sense of restlessness to nearly all the latest designs in the suburbs. In the more central districts, in older private houses, short of rebuilding, the opportunities, for a great display of glass are limited, but here, if anywhere, the system finds its excuse, for probably nowhere in the world are such narrow, cramped and ill-lighted entrances to be found as in London; and they are not confined to small houses but are found in the residences of the wealthy. The early nineteenth century was responsible for the average London house with its commonplace "hall"—a mere narrow passage—its inconvenient staircase and its sombre lower rooms. It would be a curious though not a useful task to enquire how London first adopted the trumpery ironwork of its staircases; it is repeated in a few feeble forms, patterns rather than designs, all over the town; here also it is remarkable that so commonplace a detail should have found a regular place in otherwise handsome and well-appointed houses. The leasehold system and the building of houses in hundreds at a time have acted unfavourably on both plan and design in the average London dwelling. In the great blocks devoted to flats an entrance hall is found occasionally in fashionable neighbourhoods, but in the majority of these buildings the entering visitor finds himself "full butt" upon the staircase, which is barely 5ft. from the door, and the whole arrangement is cramped and airless. The "hall" of each separate flat is little more than a box, awkward to light and to ventilate: and the inherent difficulties of the problem give little hope of a change for the better in the near future.

**The L.C.C. Works Department.** THE report of the L.C.C. Works Department for the six months ended September 30th is unusually favourable. The approximate expenditure on twenty works executed by the department during the half-year was £187,000, and the statement shows a balance of cost below final certificate of £25,853—nineteen out of the twenty were carried out at a cost below the final estimate. The number of works for which full specifications, bills of quantities, &c., were prepared is thirty-six, representing an estimated expenditure of £941,000. Included in one of the statements is the account for the erection of the first portion of the Clapham car-sheds, which was referred to the department without any estimates being prepared by the architect for purposes of comparison, the tramways account being debited with the actual cost of the work. The Highways Committee reported that it was essential that the car-sheds should be put in hand without the delay which the preparation beforehand of specifications and bills of quantities would entail. The car-sheds were completed to the entire satisfaction of this Committee. The execution of jobbing works during the year 1902–3 and part of 1903–4 has resulted in balances of cost below schedule value of £1,883 and £393 respectively. The Fire-Brigade Committee in a brief report upon the statement of the Works Committee point out that the return includes four accounts in respect of the erection of fire-stations, and they observe with considerable satisfaction that in every case the actual cost of the work has been substantially below the architect's final certificate. The Main Drainage Committee state that in regard to the three estimated works carried out for them by the Works Committee the cost was below the total amount of the final estimates by no less than £15,868, a total saving of over $11\frac{1}{2}$ per cent. on the final estimates. When it is remembered that other large works of a similar character are being undertaken by the Council it is satisfactory to note that by the direct employment of labour on these particular works the saving on the final estimate has been about 16 per cent.



MOUCHRABIYEHS IN THE RUE DE TOULOUN CAIRO

## DRAWINGS OF ARCHITECTURE.

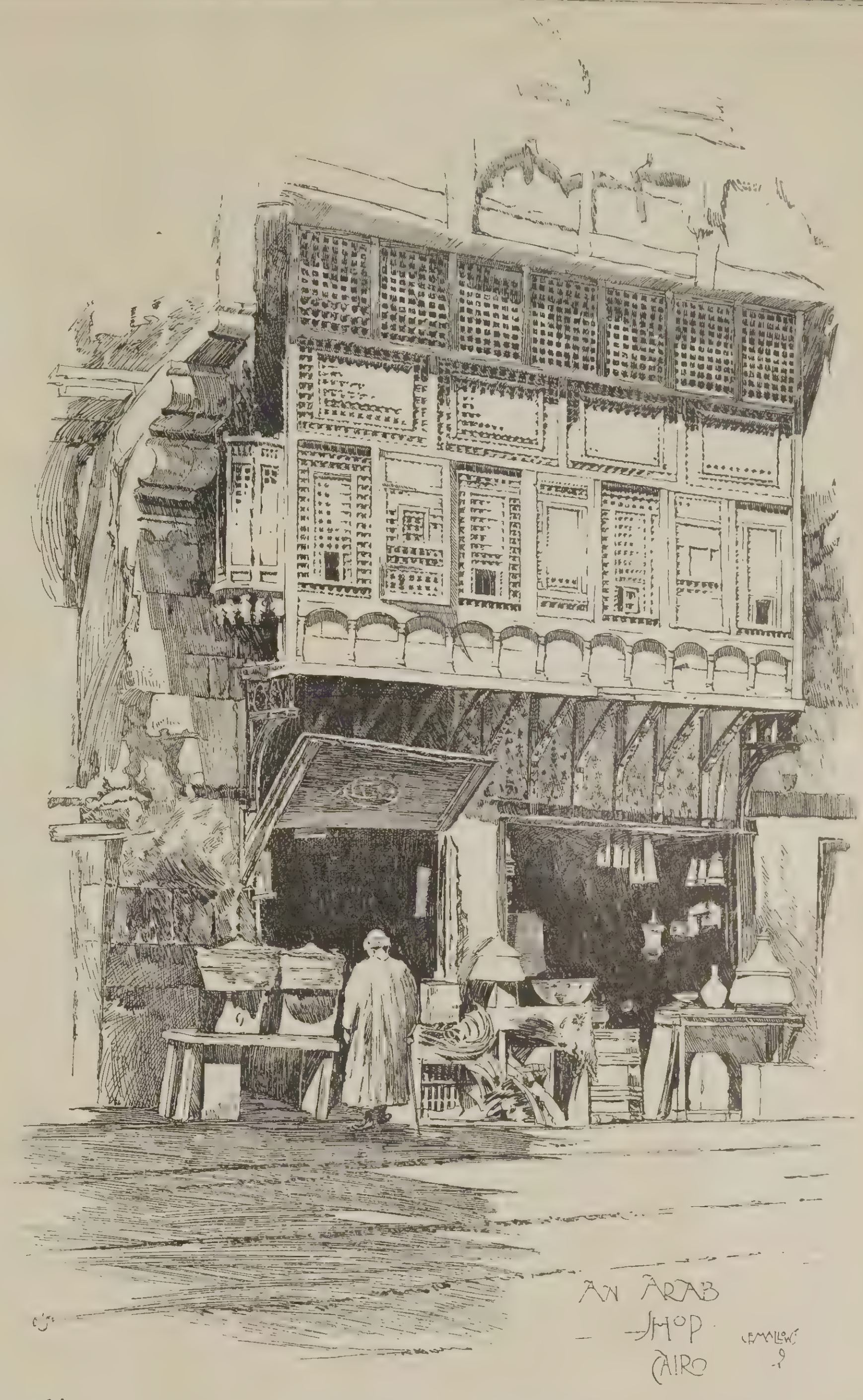
MR. C. E. MALLOWS, Mr. Hedley Fitton and Mr. C. W. English are added to our series this week.

Mr. Mallows belongs to that school of draughtsmen inspired by the Spaniard Vierge, and in his own particular branch of work he holds a first place. There is a directness about his pen drawing which has attracted many copyists, but they have found that what was so seemingly straightforward needed a master-hand to execute it. We are of course speaking of original drawings, for the mere copying of pen-work line by line is no commendable thing and denotes a mechanical rather than an artistic ability.

Mr. Mallows knows how to render light and shade exactly; he has nothing to do with finicking and scratching till some sort of effect is obtained in a haphazard manner: and like Mr. Pennell, a follower of Vierge, he has acquired that subtle knowledge of having the "blacks" in his drawings just where they are needed to hold the picture together. The accompanying drawings show all this, and more which is better appreciated by an actual examination than by description.

Mr. Fitton is another leading line draughtsman, perhaps better known by the whole-page drawings published in the "Daily Chronicle" than by the numerous book illustrations he has done. In all his drawings he concentrates attention to one particular part Thus, in the fine drawing reproduced in the centre plates of this issue it will be noticed that the main attention is centred around the porch and lower part of the cathedral, while the great tower is heightened in effect by the sparse outlining. The result is a very striking drawing.

Mr. English we suppose has made as many architects' perspectives as any other draughtsman in the Kingdom. He excels in wash work, and the drawing of the Royal Insurance building at Liverpool, reproduced in the centre plates, is an excellent example of his methods. It is bold decided work, very accurate in its perspective, and represents the architecture in a most complete manner.



## Enquiries Answered.

*The services of a large staff of experts are at the disposal of readers who require information on architectural, constructional or legal matters. Questions should in all cases be addressed to the Editor. The querist's name and address must always be given, not necessarily for publication.*

### Rebuilding Party-Walls.

BIRMINGHAM.—Y. Z. writes: "May a 9in. party-wall be taken down by one owner and rebuilt 18in. thick, 14in. of which would be kept upon his own side of the boundary line? The present party-wall is 7ft. high. The new wall would be about 30ft. high."

By common law neither party may interfere with his co-tenant's user without permission. It is therefore impossible to do what you suggest, save with the adjoining owner's consent. Unless a question of light and air arises there is no reason why you should not build a thicker wall, using your own half (4½in.) of the party-wall to form a portion of it if you so desire. F. S. I.

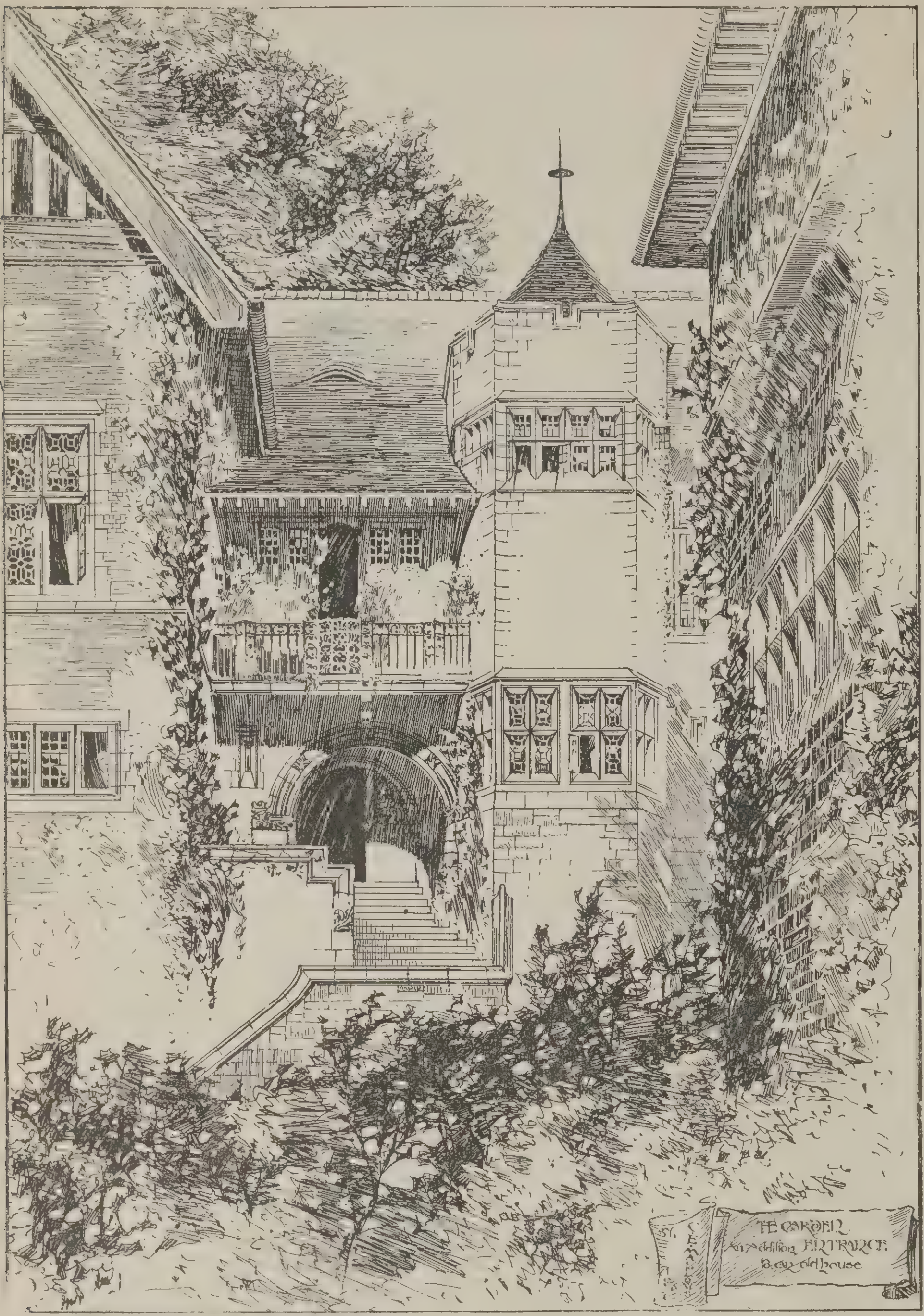
### Alterations and Right of Light.

LANCHESTER. — UNCERTAIN writes: "A owns some business premises which he has had rebuilt adjoining some business premises belonging to B. The premises have always been divided by an acknowledged party gable. B was quite willing for A to heighten his premises to the same level as his own, thereby using the gable for about 6ft., but A has exceeded this by building on top the full thickness (16in.) of a yard wall at the back which divides the properties; in fact, A has carried it up to a sufficient height to use as an offshoot scullery, &c. This has greatly interfered with the light (which has been enjoyed for about seventeen years without any obstruction) to B's main staircase, &c. A executed the work without informing B until the place was almost completed, when he sent for him to have the gable, &c., measured. B has not the slightest objection to A using the gable for the depth of the main building, but can he insist on A removing the obstruction or using the yard wall as he has done?"

The law about party-walls and fences, though quite clear in London under the Building Act, is vague in the provinces. Apparently A is justified in raising a party fence at his own expense, allowing the whole fence thus raised to remain a party fence, so long as thereby he does no damage to his neighbour. On the other hand, if by doing this he obstructs his neighbour's light he immediately brings himself within the law relating to ancient lights. In the present case, however, the light is not "ancient"—it has only been enjoyed for seventeen years, and not for nineteen years and a day. No right of light has therefore been acquired, and so none is interfered with. In fact, A is acting very wisely to obstruct it now, before a prescriptive right has been acquired. G. A. T. M.

### Iron Buildings under the By-laws.

PETERSFIELD.—H. T. K. writes: "Under the local by-laws iron buildings are exempted under certain conditions. One of the conditions is that they 'shall not be constructed or adapted to be used either wholly or partly for human habitation.' It is contended that this would preclude an iron building to be used as a shop or place of business, to which there are no living-rooms attached, and which is locked up at night after business hours. It is said that the person in charge of the shop would 'partly' inhabit it. Paragraph (i) section 2 of the by-laws describing a building wholly exempt adds the condition after 'human habitation'—'or



as a place of habitual employment for any person in any manufacture, trade or business.' This condition is omitted in the clause exempting iron buildings. I therefore wish to know whether an iron building can be constructed to be used as a place of habitual employment for any person in any manufacture, trade or business."

The by-laws of which a copy is sent appear to be in the usual form for a rural district: they should, of course, be construed as a whole, and not be strained by taking any single section without reference to the context. I therefore consider you are correct in reading into section 3, p. 6, the other modifying conditions to which you draw attention. I also consider that the definition of "domestic building" (p. 4) is opposite and tends to show that a dwelling-house and a shop are considered by the by-laws to be upon the same footing. I am unable to direct you to a decided case on this point, but, as a proof of the broad application of by-laws, the case of *The Queen* v. *Mead* (February 14th, 1895) is interesting; in this case it was held that "a chapel" was "a house" for the purposes of the "Public Health Act" (T.L.R., Q.B.D., vol. xi., p. 242). The question "Is a lock-up shop a domestic building?" is authoritatively answered in the affirmative in the Professional Notes of the Surveyors' Institution, vol. 10, p. 252. I am therefore of opinion that it is not possible, under these by-laws, to construct an iron building to be used as a place of habitual employment for any person in any occupation, trade or business. F. S. I.

## Keystones.

**The Murray Scriptorium at Mill Hill School** has been erected from designs by Mr. T. E. Collcutt, F.R.I.B.A.

**British Standard Sections.**—List No. 4, dealing with beams, has just been issued by the Committee from 28, Victoria Street, S.W., price 1s. nett.

**Elementary Schools.**—The Board of Education have recently issued rules to be observed in planning and fitting up public elementary schools.

**The Royal Insurance Co. Building** illustrated in our centre plates this week was described on p. 332 of THE BUILDERS' JOURNAL for July 15th last.

**South-Western Polytechnic, Chelsea.**—The governing body of this institute have accepted with very great regret the resignation of the principal, Mr. Herbert Tomlinson, F.R.S.

**New Public Offices, Town Hall and County School, Acton.**—The competitive designs are on exhibition at the Central Hall, Priory Schools, Acton Lane, till January 1st from 10 to 3 and 6 to 9, and on Saturday, January 2nd, from 10 to 9.

**Competition for Council Offices at Camberley.**—Four designs were sent in for this competition. Mr. R. H. Poulter's has been placed first, Mr. W. J. Hodgson's second, and two by the surveyor (Mr. F. C. Uren) third and fourth. The building is to cost £2,500.

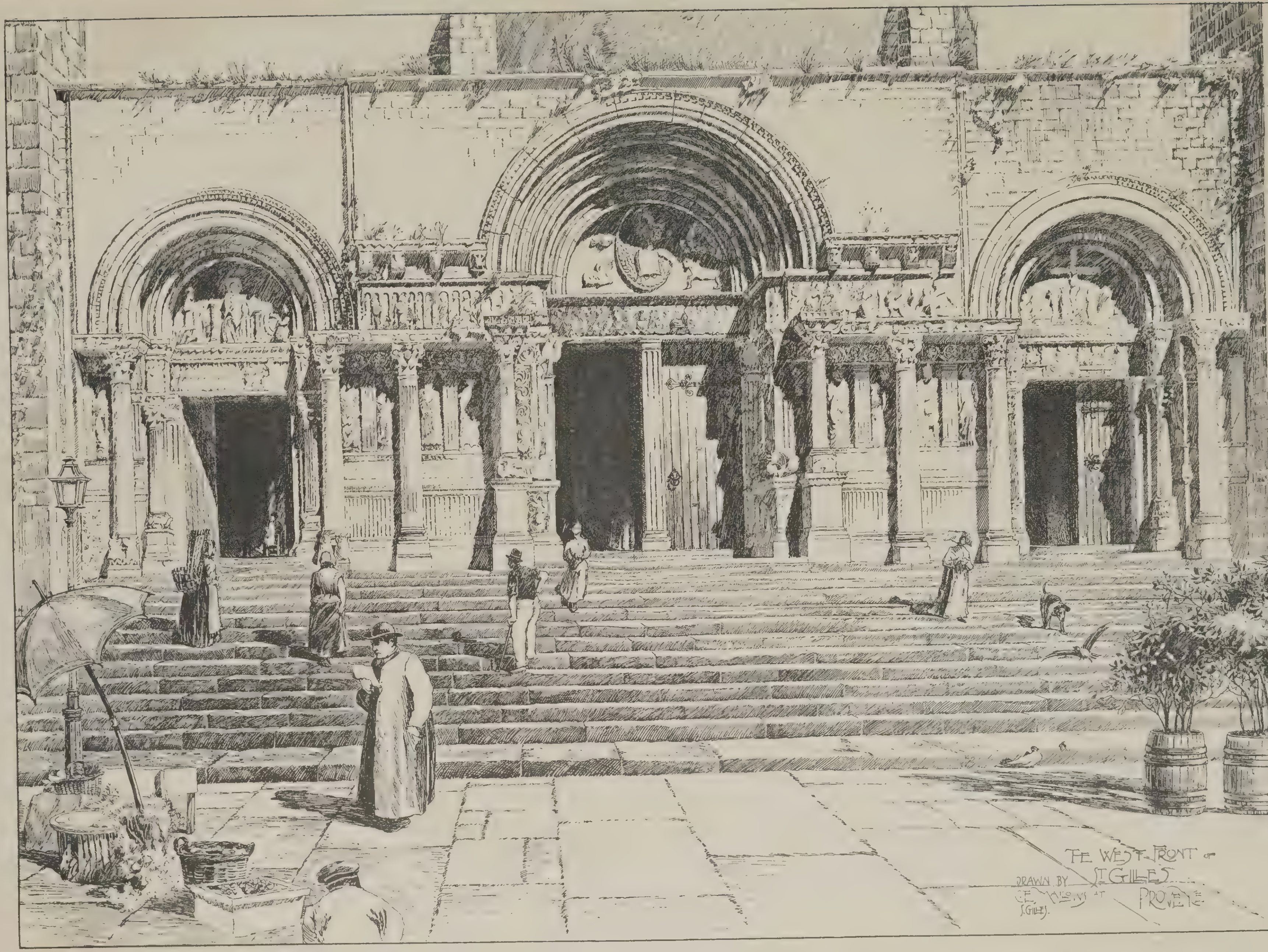
**The Horsefall Destructor Co., Ltd.,** of Leeds, have recently shipped two important destructor plants to South Africa, for Bloemfontein and Durban. Among other new destructors upon which the company is at present engaged may be mentioned plants for Folkestone, Bromley, Chiswick, Swansea, Batley, Stourbridge and Gosport. Several of these will furnish power for electric lighting, sewage pumping, &c., in addition to the sanitary disposal of refuse.

**Irish Architects and Registration.**—In his recent presidential address to the Royal Institute of Architects of Ireland, Mr. G. C. Ashlin dealt exclusively with architects' registration, speaking strongly in favour of it and holding that it had entered the realm of practical politics, so that they should help forward its speedy solution. He said that there was practically no difference of opinion on this matter among the members of the profession in Ireland.

**The Caledonian Railway Station Hotel, Edinburgh,** which occupies so prominent a position at the west end of Princes Street, and has taken some years to build, has now been opened. It has a frontage to Lothian Road of about 400ft., to Princes Street 78ft., and to Rutland Street 176ft.; it is 110ft. high. There are five bedroom floors, on which are provided 191 bedrooms and twelve sitting-rooms for the public, and more than seventy bedrooms on the attic floor for the staff. The first and second bedroom floors have each a corridor 317ft. long. The architect was Mr. J. Dick Peddie, of Edinburgh.

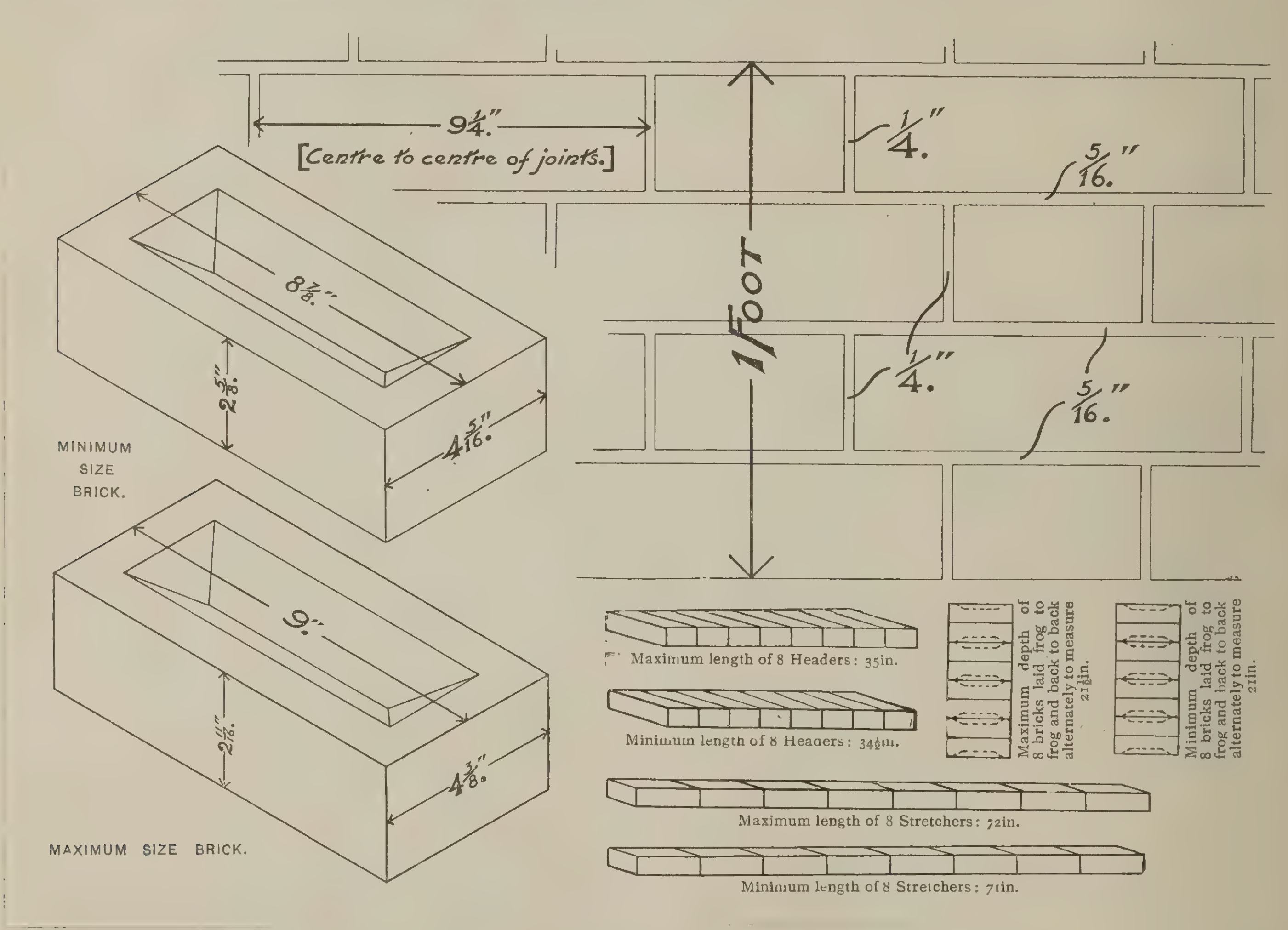
**Cheltenham Town Hall** was recently opened. The architect was Mr. F. W. Walker, of Gloucester. The general contractors were Messrs. Collins & Godfrey, of Cheltenham and Tewkesbury. Messrs. Dennett & Ingle executed the fireproof floors and stairs, Messrs. Handley & Shanks the electric light, Messrs. Osler the fittings, Messrs. Bellman, Ivey & Carter the scagliola, and Messrs. Haden, of Trowbridge, the heating and ventilation. The materials used for the main structure are pea grit from the Cleeve Hill Quarries and Bath stone lined with bricks. The cost has been about £35,000.

**Flats for the Working Classes.**—Some time ago a company was formed in Birmingham under the title of Homes, Ltd., having a capital of £25,000, with the object of providing clean sanitary dwellings in the city on the flat system. After some difficulty a suitable site was found at the corner of Palmer Street and Little Barr Street. On it have been erected two blocks of four-storey buildings designed to represent sixty houses, twenty-eight of three-rooms, sixteen of two and sixteen of one room. Each set of rooms is provided with separate lavatory accommodation, and on each floor is a washhouse fitted with two boilers for general use. The three-room tenements will be let at 5s. a week, the two-room at 4s. 3d., and the one-room at 3s. Not more than 5 per cent. will be paid to the shareholders of the company.


THE WEST FRONT OF
ST GILLES
PROVENCE
DRAWN BY
C.E. MALLOWS AT
S. GILLES.
C.H. Sc

# THE STANDARD BRICK.

By **H. D. SEARLES-WOOD, F.R.I.B.A.**


9¼"
[Centre to centre of joints.]
1/4"
5/16"
1 FOOT
8⅝"
2⅝"
4 5/16"
MINIMUM SIZE BRICK.
9"
2⅞"
4⅜"
MAXIMUM SIZE BRICK.
Maximum length of 8 Headers: 35in.
Minimum length of 8 Headers: 34½in.
Maximum depth of 8 bricks laid frog to frog and back to back alternately to measure 21½in.
Minimum depth of 8 bricks laid frog to frog and back to back alternately to measure 21in.
Maximum length of 8 Stretchers: 72in.
Minimum length of 8 Stretchers: 71in.

THE Royal Institute of British Architects' standard size of bricks is the outcome of the measurement of bricks all over the United Kingdom, and the size may be fairly said to be an average of the London stock sizes.

The whole reason for a standard size is to have bricks that will bond even when they are gathered from different parts of the country; the Royal Institute of British Architects is now in communication with the manufacturers of glazed bricks, with a view to the standard being equally applied to this class of bricks, for in using glazed bricks at the present time great difficulty is experienced by those who wish to make good sectional bond, and some serious failures have occurred in walls built with glazed-brick internal facings and ordinary walling bricks at the back, owing to the unequal shrinkage of the mortar joints, due to the fine joint of the glazed bricks and the thick joint of the ordinary brick necessary to make them work with the courses of the glazed bricks.

Some architects are opposed to the depth of bricks being brought into the standard and to the mortar joint being regulated, but it is obvious if bricks from various districts are to be used together, the three dimensions of width, length and depth must all be fixed by the standard.

Other architects prefer the bricks which work five to the foot, and there is no reason why they should not have bricks made to any size that may suit their fancy, and if they preserve the proper proportion between header and stretcher, just as good bond can be made: there is not the slightest reason why the fixing of a standard size should prevent or hinder the production of any fancy sizes, and if the demand for them is sufficient there will be plenty of brickmakers ready to supply them.

On the other hand, the value of a recognized standard of size and method of measurement cannot fail to be of the greatest advantage both to the brickmaker and architect, and to such allied trades as the terra-cotta maker and mason.

The brickmaker who makes a standard article can rely on a larger market than the local demand, while the architect can employ various classes of bricks for different parts of his building, selecting each class of brick for the purpose for which it is best adapted, without any fear of getting bad bond and consequent loss of strength in his walls.

The terra-cotta maker can prepare his models on a scale that will make the terra-cotta bond properly when set in the wall, and probably in certain classes of work he could stock a sufficient quantity of terra-cotta to avoid the delay in delivery which is the great drawback to its use at the present time. The mason, in the same way, can, when the standard bricks are used, absolutely rely on his detail in preparing his stones so that no making-up shall be required; the work, when it is set on the wall, rising truly and solid with the brick backing.

The accompanying diagrams illustrate the standard sizes and measurements, and methods of measuring the bricks, as set out in the following standard:—

(1) The length of the brick should be double the width plus the thickness of one vertical joint.

(2) Brickwork should measure four courses of bricks and four joints to a foot.

Joints should be ¼in. thick, and an extra $\frac{1}{16}$, making $\frac{5}{16}$, for the bed joints to cover irregularities in the bricks. This gives a standard length of 9¼in. centre to centre of joints.

The bricks, laid dry, to be measured in the following manner:—

A. Eight stretchers laid square end and splay end in contact in a straight line to measure 72in.

B. Eight headers laid side to side, frog upwards, in a straight line to measure 35in.

C. Eight bricks, the first brick frog downwards and then alternately frog to frog and back to back, to measure 21½in.

A margin of 1in. less will be allowed as to A and ½in. less as to B and C.

This is to apply to all classes of walling bricks, both machine- and hand-made.

The standard has been agreed upon between the Institute and the Brickmakers' Association, and has been drafted in consultation with these bodies and with representatives of the Institution of Civil Engineers.

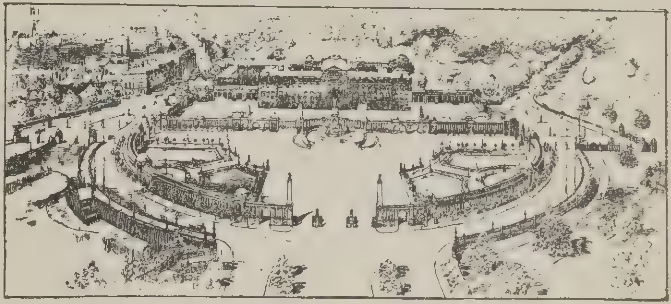
It has been ordered to come into force on May 1st, 1904.

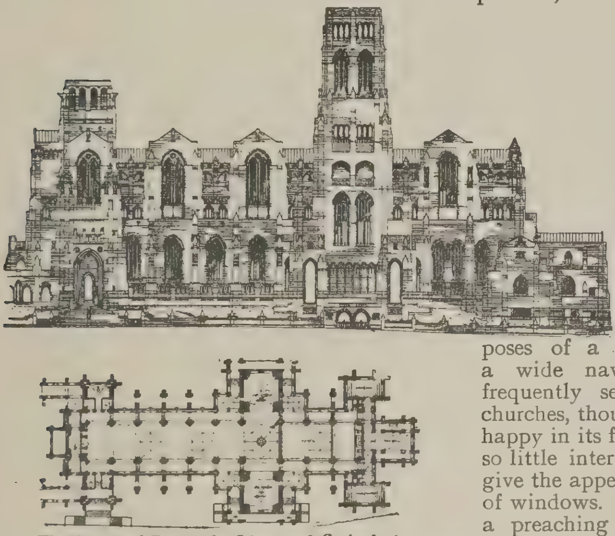
The council recommend that members should insert this standard in their specifications under the title of "The R.I.B.A. Standard Size of Bricks."

# THE ARCHITECTURAL AND BUILDING EVENTS OF 1903.

IF anyone will take the trouble to refer to events which agitated the minds of architects and builders quarter or half a century ago he will be surprised to find many questions in dispute which still remain unsettled; and these, not only in regard to elusive matters of design or style, but also as affecting practical work, such as ventilation and warming.

Design and style will always be subjects for a difference of opinion, though architects are more ready now to be catholic in their views, more tolerant of those who look at things from a different standpoint to their own, and they more generally appreciate the fact that they are living in the twentieth century and not in the days of William the Englishman or the age of Pericles.

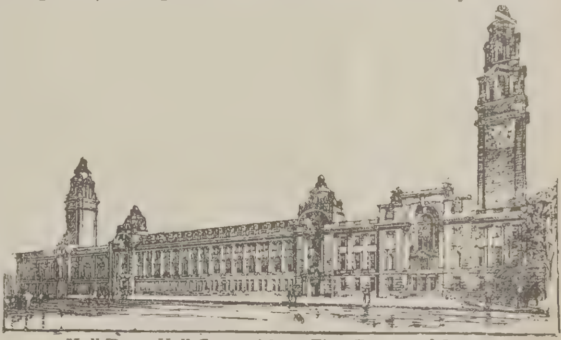

The National Memorial to Queen Victoria as it was to have been.


The Accepted Design for Liverpool Cathedral.
G. Gilbert Scott, Architect.

Yet that spirit of immuration in the past is still very much alive in the layman, who likes or dislikes a new church in so far as it resembles or disresembles what is considered to be orthodox Gothic, and who calls the Gaiety Theatre the new Newgate because it has practically no windows; the facts that we do not worship in our churches and chapels like so many monks of the Middle Ages, and that a theatre has very little need of windows, influence his opinion but slightly.

Liverpool Cathedral.

Thus we find the chief architectural event of 1903—the Liverpool Cathedral competition—hedged round with such considerations. True, the scheme had been dragging on since the 'eighties, when the first competition was won by Sir William Emerson, but it was only last May that Mr. Bodley and Mr. Norman Shaw made their award on the designs submitted in the final competition by Mr. G. Gilbert Scott, Mr. W. J. Tapper, Mr. (now Sir) C. A. Nicholson, Mr. Malcolm Stark and Messrs. Austin & Paley. The assessors had not to find the most beautiful drawings — Mr. Nicholson's were splendid examples of draughtsmanship—but the finest conception, and they had also to consider the practical and feasible aspects of the designs. The new designs embodied much the same character as those submitted in the earlier competition, thus showing that their authors had matured their views from the first. The selected design, by Mr. Scott, has been generally admitted to be a most original and powerful conception, though, as we remarked when it appeared in the earlier competition, the transverse barrel vaulting in the nave and chancel roofs is calculated to mar the acoustics of the building without possessing any mitigating advantages. Mr. Tapper's design showed a novelty in adapting to the purposes of a cathedral the plan of a wide nave and narrow aisles frequently seen in modern parish churches, though the interior was not happy in its fenestration, there being so little intervening wall-space as to give the appearance of tier upon tier of windows. Mr. Nicholson provided a preaching space under his great hexagon which it would be difficult to increase in any Gothic design, while Messrs. Austin & Paley showed a large central tower and dome of some power, though the hidden-iron-girder construction in connection with Gothic forms seemed out of place in a design based on mediæval detail. Mr. Stark's design was frankly an uninteresting re-hash of old work. Now the competition is over and the foundations of the cathedral are actually in progress we have cause to be thankful, though in a retrospect of the event the fact should not be forgotten that the mediæval Cathedral Committee all but made the final competition a fiasco, for it was only the unwilling collaboration of Mr. Bodley that ultimately resulted in their decision to carry out Mr. Scott's design. We shall watch with great interest the building of the cathedral, which is estimated to cost £500,000, though for the present the main fabric only will be proceeded with, including the choir and transepts (affording accommodation for 3,500 people): the cost of this work will be about half that of the total cost, and it is hoped His Majesty the King will lay the foundation-stone during the coming Spring.


Hull Town Hall Competition: First-Premiated Design, by Russell, Cooper and Davis, and C. E. Mallows.

G. F. Bodley, R.A.

G. Gilbert Scott.

Truro Cathedral.

The consideration of Liverpool Cathedral naturally leads one to note other ecclesiastical work of importance which has been carried out during the past twelve months. Primarily there is Truro Cathedral, the nave and central tower of which were formally opened in the presence of the Prince and Princess of Wales last July. The work was begun in 1880 and the erection of the choir, transepts, baptistery and part of two bays of the nave completed seven years later. Then for nine years no special effort was made to continue the building; but the sudden death of Archbishop Benson, the

The Biggest Competition of the Year: Improvements at the U.S. Military Academy, West Point, N.Y. Cram, Goodhue and Ferguson, Architects.

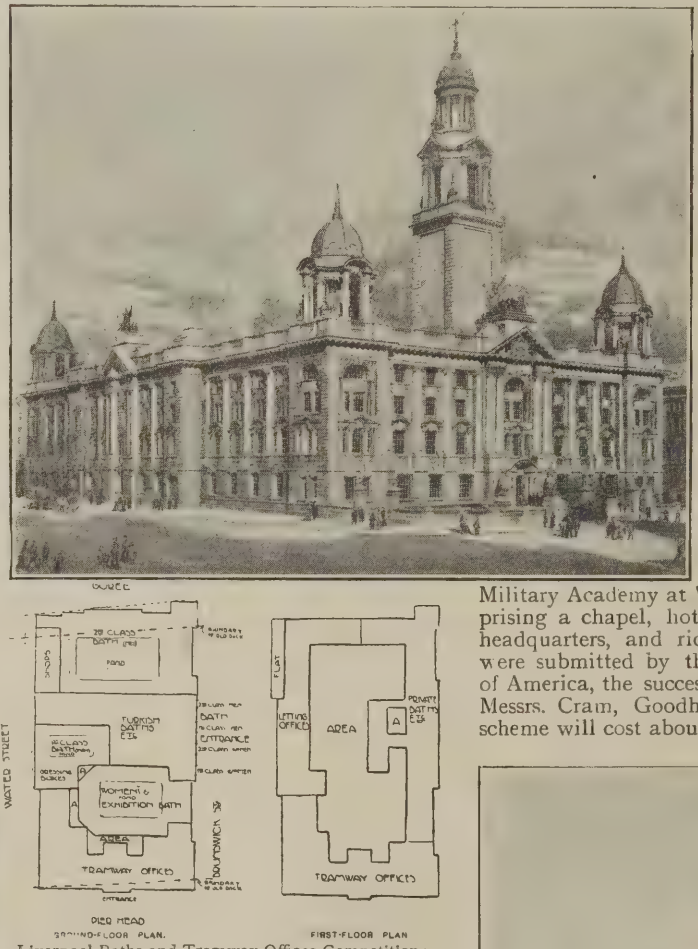
first Bishop of Truro and the founder of the cathedral, recalled the whole idea to the public mind, so that money was again forthcoming, and building was resumed in June 1899, the designs of Mr. J. L. Pearson being faithfully carried out by his son, Mr. F. L. Pearson. The cathedral, however, cannot be regarded as really worthy of the twentieth century.

**Westminster Cathedral.**

At Westminster Cathedral the campanile, 284ft. high and 30ft. square, was completed about May last—a noble piece of work which the man in the street, with predilections for Gothic, is pleased to call a factory chimney. Within the building the mosaic and marble decorations of the side chapels have made much progress in the hands of Mr. George Bridge and his staff of lady artists, chattering in their overalls like so many birds in a tree (which, for the nonce, is represented by scaffolding). The influence of Westminster Cathedral on the design of other churches in this country continues to be felt. This was particularly noticeable in the drawings submitted for the Soane competition, the subject of which this year was a town church on a corner site. The winning design, by Mr. E. F. Reynolds, had a fine effect and was rendered by most excellent drawings.

Among churches of note which have been finished this year is that of St. Agatha at Birmingham, a very refined example of modern Gothic by Mr. Bidlake, and the Church of the Holy Trinity, Kensington, by Mr. Bodley, consecrated in September; while work has been proceeding at St. Ann's Cathedral, Leeds (of which Mr. Eastwood is the architect), and Christ Church, Brixton, has been completed, a characteristic design by Prof. Beresford Pite thoroughly modern in treatment, with its novel roof-truss and exposed girder supporting the gallery.

New Building for the Royal London Friendly Society, Finsbury Square, London. John Belcher, A.R.A., Architect. (Academy, 1903.)



Liverpool Baths and Tramway Offices Competition: First-Premiated Design, by Stones and Stones.

**Competitions.**

As usual a great many architectural competitions were held in this country during the year, and, with some exceptions, were conducted in a satisfactory manner. The chief of them—that for Liverpool Cathedral—has already been dealt with. Of the rest, attention should be drawn to the competition for new baths and tramway offices at Liverpool, none of the premiated designs for which were adopted; seven architects were afterwards requested to submit designs for baths only, Mr. A. Saxon Snell's being recommended by the Committee, but the matter has now been referred back, so that the scheme is again shelved.

At Glasgow the managers of the Royal Infirmary finally rejected the advice of the Glasgow Institute of Architects in regard to their rebuilding scheme, and at Edinburgh some discussion arose in regard to the Usher Hall: this is to be a place where the public may hear good music at cheap prices, the late Mr. Andrew Usher having given £100,000 for the provision of such a building. It had been decided that the Synod Hall should be remodelled for the purpose and this work was placed in the hands of the city architect (Mr. R. Morham), but considerable protest was raised, on the ground that the work should be made the subject of open competition; the Town Council, however, stuck to their original proposal, and the city architect is now engaged on the plans.

Taking competitions all the world over, undoubtedly the biggest of the year has been that in America for improvements at the United States Military Academy at West Point, N.Y., comprising a chapel, hotel, cadet barracks and headquarters, and riding school. Designs were submitted by the principal architects of America, the successful competitors being Messrs. Cram, Goodhue & Ferguson. The scheme will cost about £1,000,000.

British Linen Co.'s Bank, Threadneedle Street E.C. J. Macvicar Anderson, Architect.

New Gaiety Theatre, Strand, London.
Ernest Runtz and Ford, Architects.

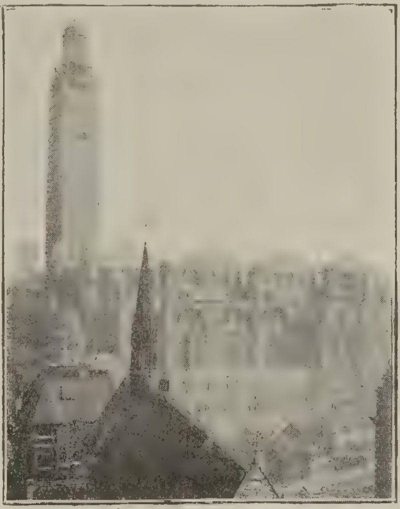
**Holborn-Strand Improvement.** During the year very considerable progress has been made with the Holborn-Strand improvement. The pulling-down of the disreputable property within the area of operations has proceeded regularly and rapidly. At the Holborn end, Southampton Row has been partly widened towards Theobald's Road, and on the corner site the new Baptist Church House, a large stone building designed by Mr. Arthur Keen, has been erected. At the Strand end, the bifurcating roadway called Aldwych (the Council having decided on this name last February) has been laid out and wood-paved, and work will soon be commenced on the straight thoroughfare—to be called Kingsway—that will lead to Holborn. At the eastern corner of Aldwych a new block comprising Carr's restaurant and the London and County bank has been erected from designs by Mr. Walter Emden: and on the same crescent a large hotel is to be built from designs by Messrs. A. Marshall Mackenzie & Son, of Aberdeen. At the western end of the "island" that lies between Aldwych and the Strand, the new Gaiety Theatre has been built and opened, the work on the hotel adjoining being rapidly advanced. Messrs. Ernest Runtz & Ford are the architects.

While referring to the Gaiety Theatre, one may opportunely mention that opposite to it two new theatres, in one block with an hotel between them, are to be erected, respectively for Mr. Saunders and Mr. Carson: Mr. Sprague being the architect. The block will be French Renaissance in style.

Co-extensive with the rebuildings have been the demolitions. Opposite the new Gaiety the old Gaiety has been pulled down, an interesting Gothic theatre exhibiting much freshness in its brick details, and soon the "Morning Post" offices which adjoin will be demolished, though it is only ten years since they were remodelled and rebuilt according to the plans of Mr. H. O. Cresswell. The new "Morning Post" offices will occupy a site at the western corner of Aldwych, opposite the new Gaiety Theatre.

Deptford Town Hall Competition: First-Premiated Design, by Lanchester, Stewart and Rickards.

After the pavement had been laid down, the suggestion was made by Mr. Thornycroft that the building line at the eastern end of the "island" site should be altered from its present position as now settled (which cuts in towards the middle of St. Clement Danes church) in order that it might be carried sufficiently far back to secure the architectural line of the Law Courts when looking eastwards. Other suggestions in modification of the idea were made, including one by the R.I.B.A., but the Council eventually decided that the loss of revenue entailed in cutting off the ground would not be compensated for by the architectural vista secured: so the proposals came to nothing.



Westminster Cathedral
The late J. F. Bentley, Architect.

Meanwhile there has been speculation in regard to the plots themselves. These were put up to public auction last July, but no bids were forthcoming, chiefly, it was alleged, because the building conditions were onerous, and especially because it was left for the superintending architect to settle any dispute which might arise as to the elevations, from which decision there was to be no appeal. This restriction was afterwards removed, it being decided that a clause should be put in the agreement for the appointment of an arbitrator by the R.I.B.A. in case of disagreement. Whether the conditions as existing will yet attract builders remains to be seen. By some persons the belief is held that the land will not be let quickly until leases are offered for ninety-nine years instead of eighty; in the meantime it has been pointed out that the cost of the improvement is increased by £3,000 a year so long as the land remains unbuilt upon; which information is naturally disquieting.

**The Architectural Museum.** Towards the end of the summer the Architectural Association came into possession of the Royal Architectural Museum in Tufton Street, Westminster, which is to be their new home. They have obtained a fresh lease for 999 years from the Ecclesiastical Commissioners, and Messrs. Holloway Brothers are now carrying out the alterations (which will cost £8,440) under the direction of Mr. Leonard Stokes. It is hoped that they will be completed next Spring, when the Association will be able to carry on its work in a more useful manner, while the museum itself will be rearranged and made more interesting to visitors and students.

The Strand Improvement Scheme.

**The Dust Nuisance.** The dust caused during the demolition of buildings in the City of London has long been a cause of annoyance, even of danger. The Streets Committee of the Corporation conferred on the matter with the R.I.B.A., the Surveyors' Institution and the Institute of Builders, the result of which was a recommendation that certain by-laws regulating the demolition of buildings should be adopted. The Corporation have since approved them. These by-laws stipulate that, in addition to the usual hoards and fans at first-floor level, the windows and other openings are to be close-boarded, and the roof, internal partitions and cross walls pulled down before the main walls are touched. Another important requirement is that water shall be freely sprinkled whilst the demolition is going on. Finally, the work is only to be allowed during certain hours—that is, not between 10 and 6, when the streets are full of people.

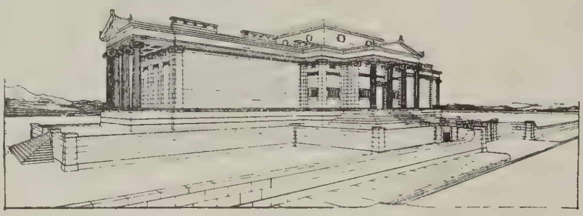
The Soane Medallion Design for a Town Church. by E. F. Reynolds.

Victoria and Albert Museum, South Kensington. Aston Webb. Architect.

Hospital for Epilepsy and Paralysis, Maida Vale, London. Young and Hall, Architects.

Hospitals.

At the London Hospital the new out-patients' department was opened by the King and Queen in June. It is the largest of its kind in the United Kingdom, occupying nearly an acre of ground, but is only proportionate to the number of out-patients, 162,147 of whom were treated during 1902. In the centre of the ground floor is a waiting-hall 105ft. by 55ft. by 40ft. high, having seating accommodation for 1,000 persons. The general arrangement is such that the patients are sorted after entering, and then proceed through the department in which their case is dealt with, leaving by another way when they have obtained their medicines. The total cost was £80 000. Mr. Rowland Plumbe was the architect.



Alexander Thomson Studentship, 1903: Prize Design for a University Picture Gallery in Greece, by Beattie Brown, junr.

In July the extension to Camberwell Infirmary, a large block of buildings, costing about £200,000, was opened. The buildings occupy several acres of ground and are arranged on the "scattered homes" principle (which the St. Giles Board claim to have introduced for the first time into the metropolis), being connected by glass-covered ways and subways. The accommodation has been increased from about 330 to 800 beds, and includes a separate block for children. Mr. E. T. Hall was the architect.

It was decided to remove King's College Hospital to Camberwell and proposed to rebuild "Bart's" on the present site.

During the year the building of the new surgical block and nurses' home at Charing Cross Hospital was undertaken according to the designs of Mr. A. Saxon Snell, at a cost of about £85,000. A very novel feature is the staircase block behind the surgical block. This forms the main means of intercommunication, and above the fourth storey is carried up to form two floors of isolation wards, to which there is a separate lift from the basement.

Kettering Free Library Competition: First-Premiated Design, by Goddard and Co.

On the south side of the Thames, in the Clapham Road, the new Belgrave Hospital for Children was completed, Mr. H. Percy Adams being the architect. Up to the present the centre block, east wing, part of the south wing, out-patients' department and mortuary have been erected, comprising two wards with fourteen cots in each and a babies' ward with eight cots, together with offices for the staff. This has cost about £35,000. A feature of the hospital is the teak staircase, which is carried independently of the walls, a stout newel running from top to bottom; the treads are of solid stuff 13½in. by 6½in.

At Belfast the Royal Victoria Hospital (Messrs. Henman & Cooper, architects) was opened by Their Majesties the King and Queen. The special feature of this hospital is its ventilation, which is on the plenum system; lighting is from slightly sloping clearstory windows, not opening. The main corridor of the hospital is 450ft. long and 9ft. wide, off which are seventeen wards with fourteen beds each. The cost, including engineering work and laundry, was a trifle over £300 per patient's bed.

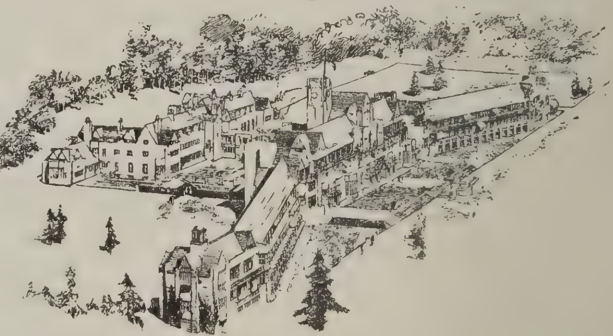
In November King Edward laid the foundation-stone of the sanatorium which is being erected at Midhurst, in Sussex. There was a competition for the best essay and plan about two years ago, but the buildings will not be erected according to the prize plans, the work having subsequently been put in the hands of Mr. H. Percy Adams, who spent some time on the Continent during the early part of the summer making an inspection of the chief sanatoria there. The King's Sanatorium is divided into two distinct parts, the administration building on the north and the patients' building (a centre block with wings) to the south. The patients' bedrooms are about 14ft. by 11ft. and 11ft. high, and accommodation is provided for 100 beds, eighty-eight for necessitous patients and twelve for well-to-do. The upper floors will be occupied by bedrooms. The cost will be £75 000.

Mr. Chamberlain's Proposals.

In home affairs the year 1903 will be notable for the fiscal proposals of Mr. Chamberlain. These affect all home industries, the building trade not the least. The figures in the great Blue-Book published last September, and tabulated in our columns, show that girders, beams, cement, painters' materials, &c., are being shipped into this country from abroad in amazingly increasing quantities, while our own shipments to foreign countries are decreasing.

Standardization of Bricks.

The standardization of bricks received additional consideration during the year. At the meeting held at the Building Trades' Exhibition in 1901 a tentative standard was adopted; last June at a similar meeting the recommendations of the R.I.B.A. special committee were adopted, and since then the standard size has been ordered by the R.I.B.A. to come into force on May 1st next. Details will be found in the illustrated article on the subject published in this issue.



The King's Sanatorium, Midhurst, Sussex. H. Percy Adams, F.R.I.B.A., Architect.

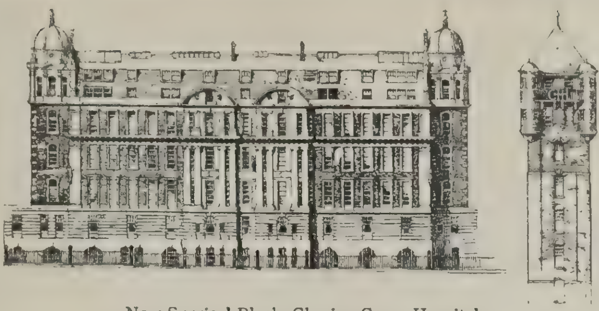
Exeter Cathedral Glass.

Early in the year there was a proposal to take down the glass in the great west window of Exeter Cathedral, by Peckitt of York, and replace it with other glass as a memorial to the late Archbishop Temple. It was generally admitted that the glass was of a debased type and might fitly be replaced by something worthy of the position; while, in order that it might still be accessible as a record for study, the glass was removed to the chapel. The original idea for Peckitt's window included a border of the coats-of-arms of subscribers. The then Dean and Chapter made a profit on the archbishops' arms of two guineas, a guinea each on the arms of the peers, and on the arms of eight of the baronets and the four members of Parliament a guinea and a half each. But Mr. Peckitt brought in a bill for extras which more than swallowed up the savings.

Western District Hospital, Glasgow. Alex Cullen, Architect.

Sweet Briar Institute, Virginia, U.S.A. Cram, Goodhue and Ferguson, Architects. (Now being built.)

**Architects' Registration.** One of the topics of the year has been the resuscitated proposal for the registration of architects. The Bill of the Society of Architects was read a first time in the House of Commons at the end of February, but got no further, nor is it likely to be put on the statute book while the attitude of the senior body remains what it is and while so much difference of opinion in regard to the Bill exists among the profession. Mr. Aston Webb, in his presidential address to the Institute in November, went very fully into the question, declaring himself not a supporter of a movement which would be repugnant to every artist. Good architects, he declared, would do just as good architecture whether they were registered or not, and the proposal would consequently make no difference to our best architecture; nor would it affect speculating builders, auctioneers, &c., who did much building but did not now call themselves architects. Mr. Webb said it seemed to him that registration would be useless and fallacious until architects had come to some agreement among themselves as to the standard to be set up and the manner of testing it. The proposal, however, has been advanced by the Society of Architects with all the more spirit, and it has had the support of several of the allied provincial societies, some of whom have passed resolutions in favour of registration. But up to the present nothing definite has resulted.

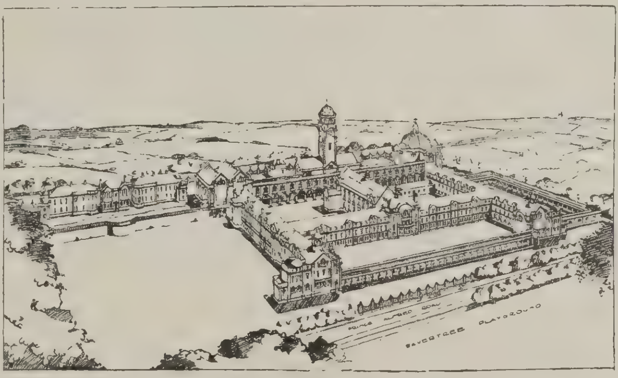

New Surgical Block, Charing Cross Hospital.
A. Saxon Snell, F.R.I.B.A., Architect.

New Building for University College, Sheffield.
Gibbs and Flockton, Architects. (Academy, 1903.)

**Education Proposals.** Within the last few years many alterations have been made in the methods of architectural education in this country, and everything points to still more extended changes. The chief trend is towards the day school and the workshop, the student in the former preparing himself for his career in a systematic and complete way, so that the years of pupilage may not be wasted by insufficient knowledge at the commencement, while in the workshop he is instructed in the various processes of building, and taught the limitations and possibilities of material.

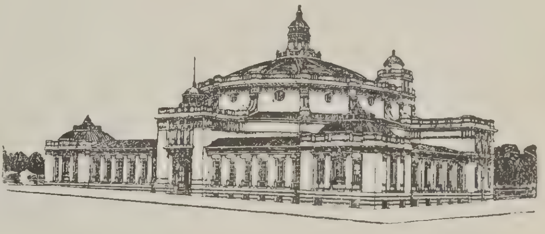
The Institute have had laid before them by a body of well-known architects (including Mr. Blomfield, Mr. Macartney, Prof. Lethaby and Mr. Ricardo) certain proposals embodying these methods, and have appointed an Education Committee to deal with the matter. The co-operation of the various teaching bodies in London is hoped for, and in course of time it is proposed to extend the scheme to the chief cities of the kingdom: it is also proposed to constitute a Board of Architectural Education. In connection with this subject attention may be drawn to the valuable articles on the curricula in the English, French, German and American schools which appeared in The Architectural Review during the year.

As distinct developments it may be stated that at University College, London, systematic day courses of instruction in architecture, under the direction of Prof. Simpson, were begun in October. At Leeds day and evening classes in architecture were instituted at the School of Art, framed with the special object of preparing students for the R.I.B.A. examinations; and at Glasgow arrangements were made between the School Board and the Institute of Architects for the proper teaching of architecture in the Board schools. In Ireland the proposal of the R.I.A.I. to hold examinations of their own was approved, it having been found that Irish architectural students had very little enthusiasm for the R.I.B.A. examinations.


Bluecoat Hospital, Liverpool.
Briggs and Wolstenholme, F. B. Hobbs and Arnold Thornley, Architects.

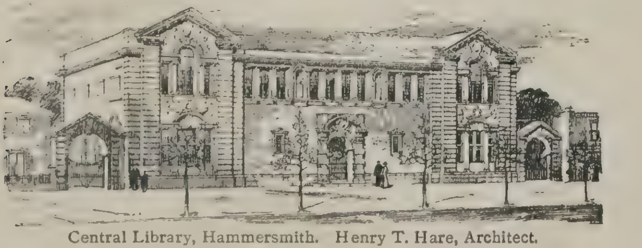
**London Building Act Amendment.** Early in the year the Bill for amending the London Building Act was read a first time in the House of Commons. It was drawn without consultation with the City authorities, whose strong opposition to the Bill obliged the Council to withdraw it. In its general aim and purpose the Bill was commendable, but it was too drastic, and would have caused severe losses and expenses to owners of property. A new Bill is now being drafted, though it will not be introduced during the forthcoming session of Parliament.

**Ventilation of the House of Commons.** In August a Select Committee issued its report on the ventilation of the House of Commons. Three main proposals came before them—Mr. Key advocating the plenum system, with air forced in at the ceiling level, Mr. Armitage also advocating the admission of air at the ceiling but withdrawing it with exhaust power at the base of the clock tower, and Mr. Fox advocating the introduction of air at low velocity along the sides, under the galleries, and elsewhere, withdrawing at both floor and roof level. All three schemes were disapproved of in part by the committee, and nothing better came of the enquiry other than the urging of a full investigation into the problems of ventilation. The committee recommended that certain alterations in the present system in the House should be made, but it does not seem probable that these will get rid of that "deadness" of the air so carefully admitted into the chamber.


Cape University Competition: First-Premiated Design, by W. Hawke, A.R.I.B.A.

**British Association's Meeting.** At the meeting of the British Association, held this year at Southport, no paper of any particular importance to architects and builders was read; perhaps that on a new system of treating timber, by Mr. W. Powell, was as interesting as any of its kind. The process consists in boiling the wood in a thin saccharine solution and afterwards drying it. By this means soft woods are made more dense and less inflammable; experiment showed, too, that the tensile strength was increased—pitch-pine from 14 to 32 per cent. and yellow pine from 56 to 107 per cent.

**The British Museum Extension.** It was announced in August that a new wing was to be added to the British Museum at a cost of £200,000. This addition is part of a general scheme which will ultimately see the British Museum covering the whole area bounded by Great Russell Street, Montague Street, Montague Place and Bedford Square. The ground forming this block, and not already occupied by the Museum buildings, was acquired some time ago from the Duke of Bedford. The new plans, prepared by Mr. Henry Tanner, architect of the Office of Works, concern the frontage towards Montague Place, or the northern side of the Museum. Here a block 380ft. long will be erected, but this length does not cover the whole frontage towards Montague Place. Corner wings, as they may be called, like the White Wing which was built twenty years ago to the south-east of the main building, will some day be added.


Central Library, Hammersmith. Henry T. Hare, Architect.

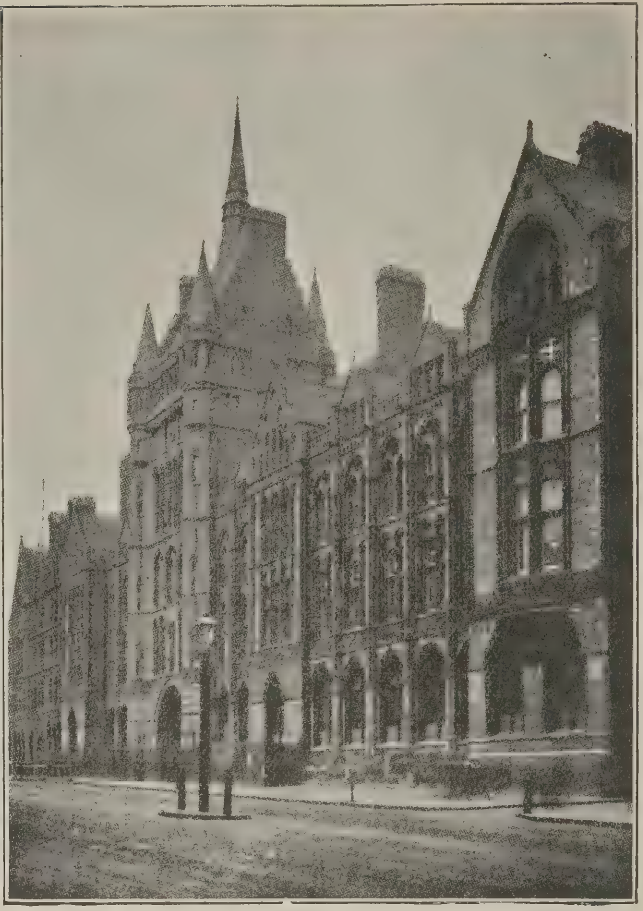
Nether Swell Manor, Glos. E. Guy Dawber, Architect. (Academy, 1903.)

**Bridges.** Bridges, both old and new, have been the subject of many proposals during the year, in London especially.

At Kew the new bridge designed by Sir John Wolfe Barry and Mr. C. A. Brereton was opened by the King in May. It is of Scotch granite. There are only three arches proper, the central arch of 133ft span and two side arches of 116ft. 6in. span. They are said to be flatter than those of any elliptical stone bridge of any importance.

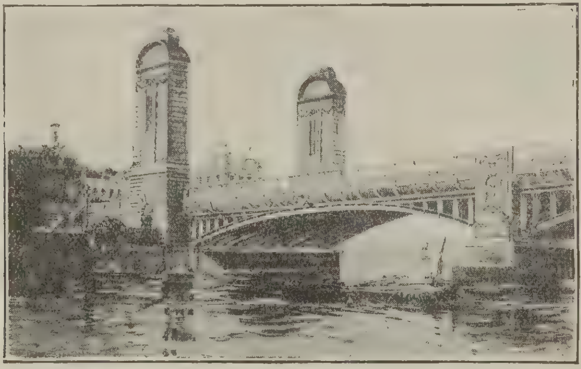
Southwark Bridge has long been almost dis-used owing to the steep inclines by which it is approached. It was therefore decided last September to lower the summit of the bridge about 8ft., to improve the gradient of Queen Street, and raise the level of Upper Thames Street where it intersects the approach to the bridge. This scheme was prepared by the City surveyor, Mr. Andrew Murray, and Mr. E. W. Cruttwell, and is estimated to cost £350,000. It will result in an improvement in the gradient of the north side from 1 in 20 to about 1 in 50 and on the south side from 1 in 23 to 1 in 40, comparing very favourably with the gradient of Blackfriars Bridge, which is 1 in 40. Parliament will be asked to sanction the proposal, and when that has been done competitive designs will be invited.

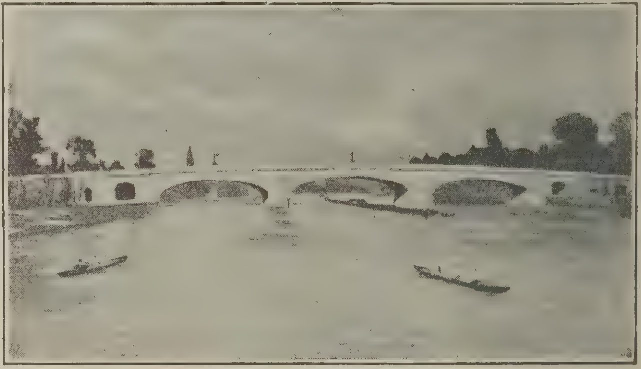
At London Bridge the widening made good progress. The granite corbels (650 in number) carrying the extended footways on either side are now all in position, and it is probable the work will be finished by the end of March next, when it will be possible to judge whether the bridge has been marred or not by the alterations.


Prudential Assurance Co.'s Building, Holborn Bars.
Alfred Waterhouse and Son, Architects.

Lambeth Bridge also came under consideration during the year, and in the autumn an important proposal to rebuild it was made. This, however, was postponed, owing to the work already in hand.

The rebuilding of Vauxhall Bridge has not yet commenced, the foundations having given so much trouble: but the contract for the superstructure was let in October to Mr. Charles Wall for £142,942. The original intention was to build a concrete bridge faced with granite, but this was ultimately set aside because there would not have been sufficient headway, and the trouble with foundations would have been very great. In November, 1902, the Council approved a design for a steel bridge to cost £170,000. This was Mr. Maurice Fitzmaurice's, and not at all an admirable one. Mr. W. E. Riley, the superintending architect, and Mr. Fitzmaurice, the engineer, afterwards undertook a revised design, which is a great improvement: the proposed pylons at each end of the bridge were not definitely approved because they would add £10,000 to the cost of the bridge; it was, however, decided that they should be carried up to the level of the parapet and plaster models erected to see the effect.


Revised Design for Vauxhall Bridge. W. E. Riley and Maurice Fitzmaurice, respectively Architect and Engineer, L.C.C.


The new Kew Bridge.
Sir John Wolfe Barry and C. A. Brereton, Engineers.

There was an outcry against the proposed rebuilding of the picturesque old bridges at Sonning, on the Thames, but in the end the Oxfordshire County Council decided to adopt lattice girder parapets supported on iron piles, for which tenders amounting to more than £7,000 were accepted.

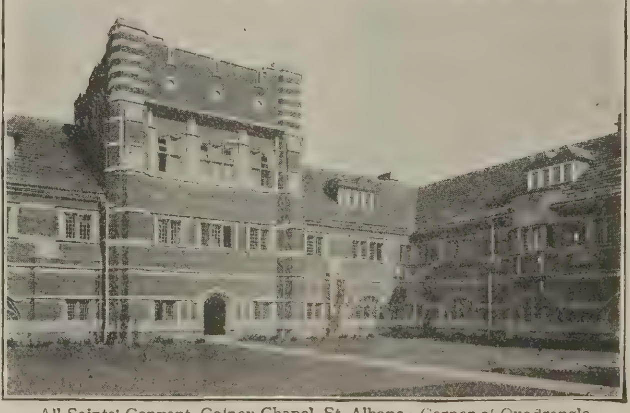
In March, during a gale, Menai Suspension Bridge was lifted completely off its bearings. A scheme for strengthening it was afterwards decided upon.

In the autumn attention was drawn to the condition of the old Bridge of Ayr, which is in danger of collapse owing to the cracks in the arches and the undermining of the piers.

The old Exe bridge at Exeter was closed to traffic, preparatory to demolition, and at Berwick the old bridge had to be repaired.

**The Standard H-Beam.** A most important event of the year was the publication last March of the results of the Engineering Standards Committee's most exacting investigations. The work was really undertaken by two dozen committees and sub-committees composed of the most eminent men in the iron and steel industries of this country, including fourteen representatives from Government Departments: it also received a Government grant. Since the publication of the results many large firms have adopted the standard sections, and it is expected that when they are in general use a saving of several millions of pounds yearly will be effected. The standardization of the **H**-beam was long needed, and it is this section which mostly concerns builders and architects. Thirty sections of it are given by the committee in their pamphlet of standard sizes, varying from 3in. by 1½in. to 24in. by 7½in., and weighing respectively from 4lbs. to 100lbs. per ft.

Beams ordered to the standard thickness are to be practically accurate in profile, but if the thickness of the web is less or greater than the standard size the width of the section must be increased or decreased by the same amount.


All Saints' Convent, Colney Chapel, St. Albans: Corner of Quadrangle.
Leonard Stokes, F.R.I.B.A., Architect.

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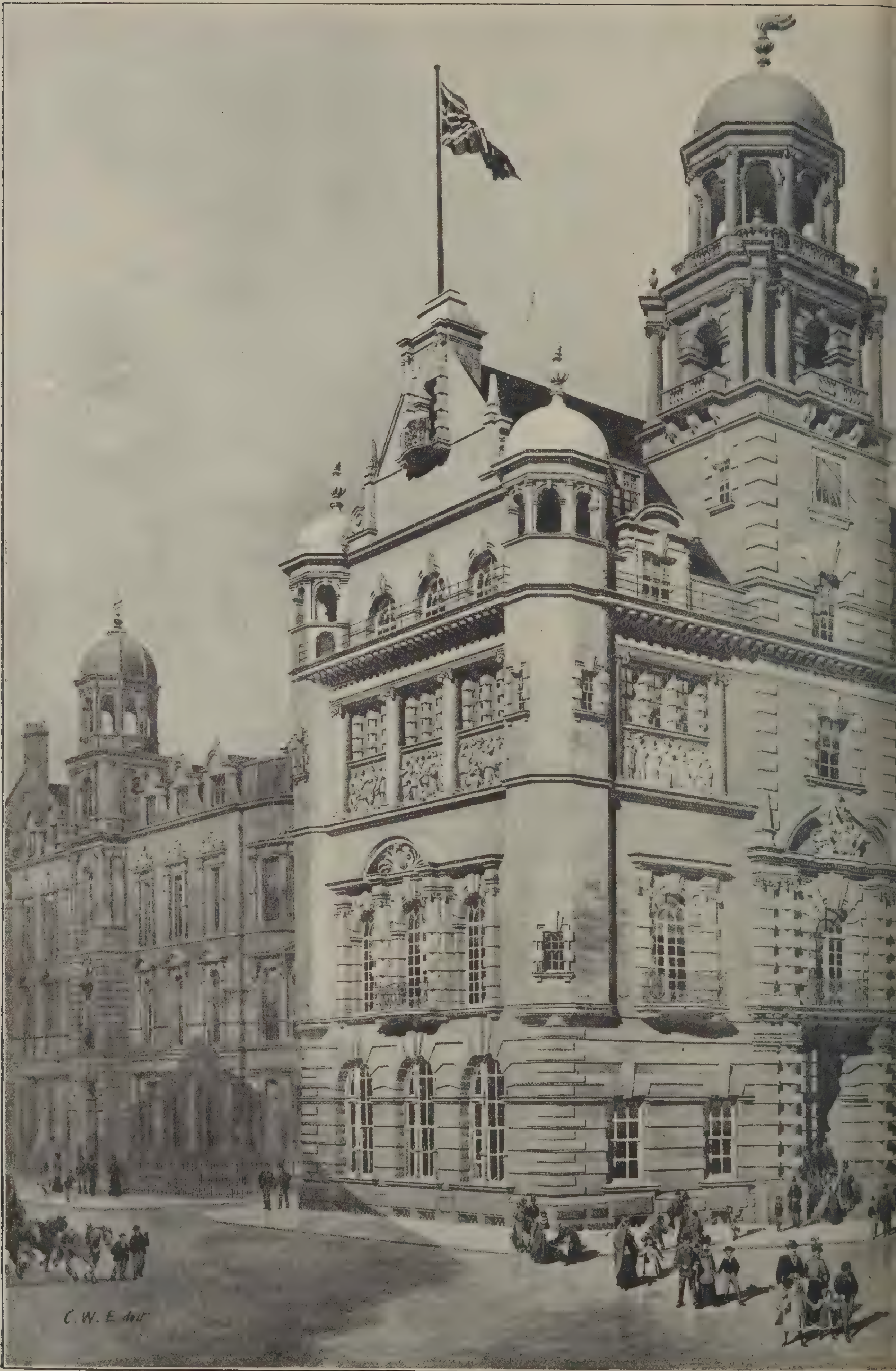
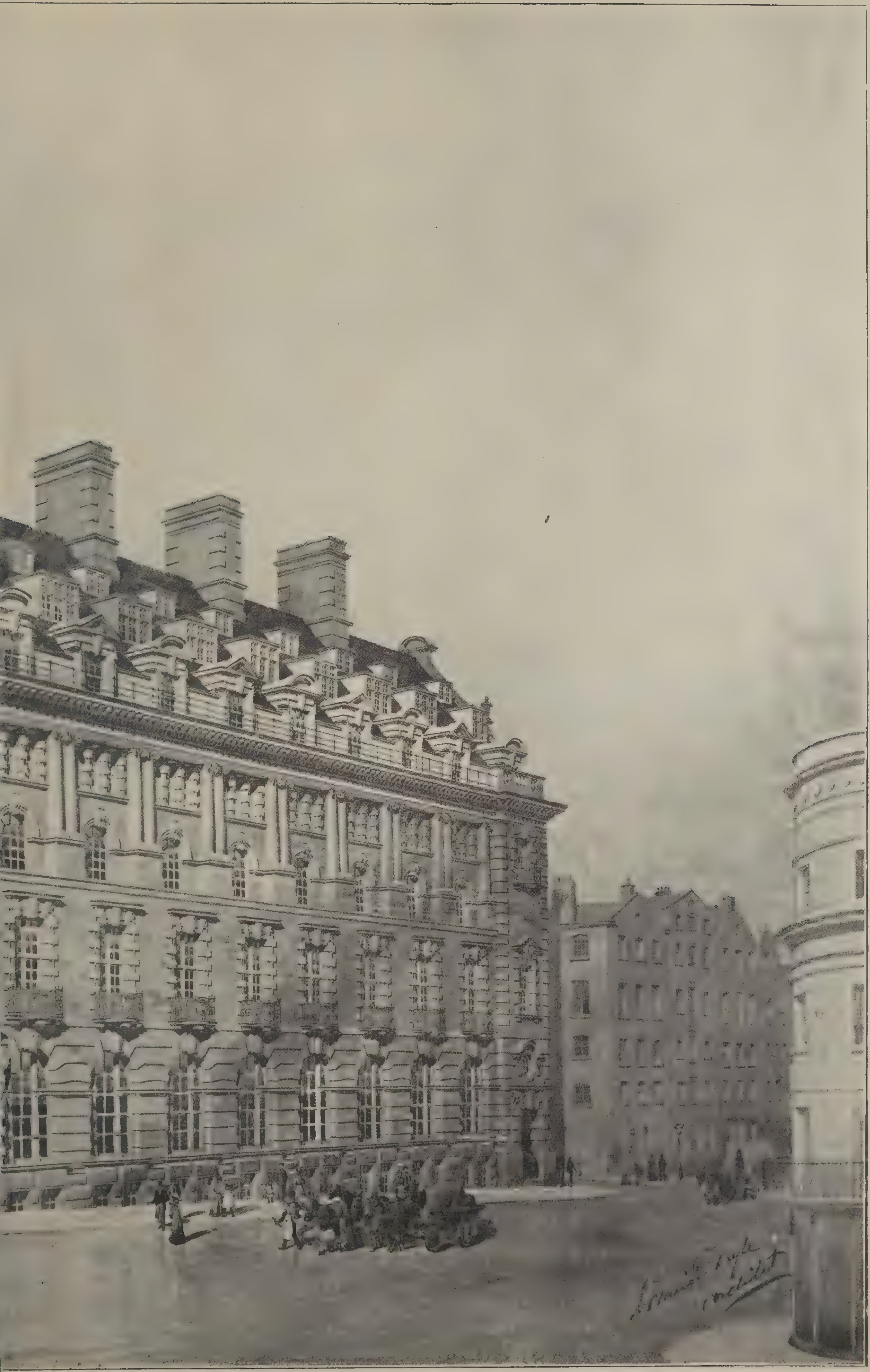
*Supplement to*
The Builders' Journal and Architectural Record,
*Wednesday, December 30th, 1903.*



New Offices of the Royal Insurance Company. North John Street Liverpool. J. Francis D



E, Architect. R. Norman Shaw, R.A., Consulting Architect. (Perspective by C. W. English.)

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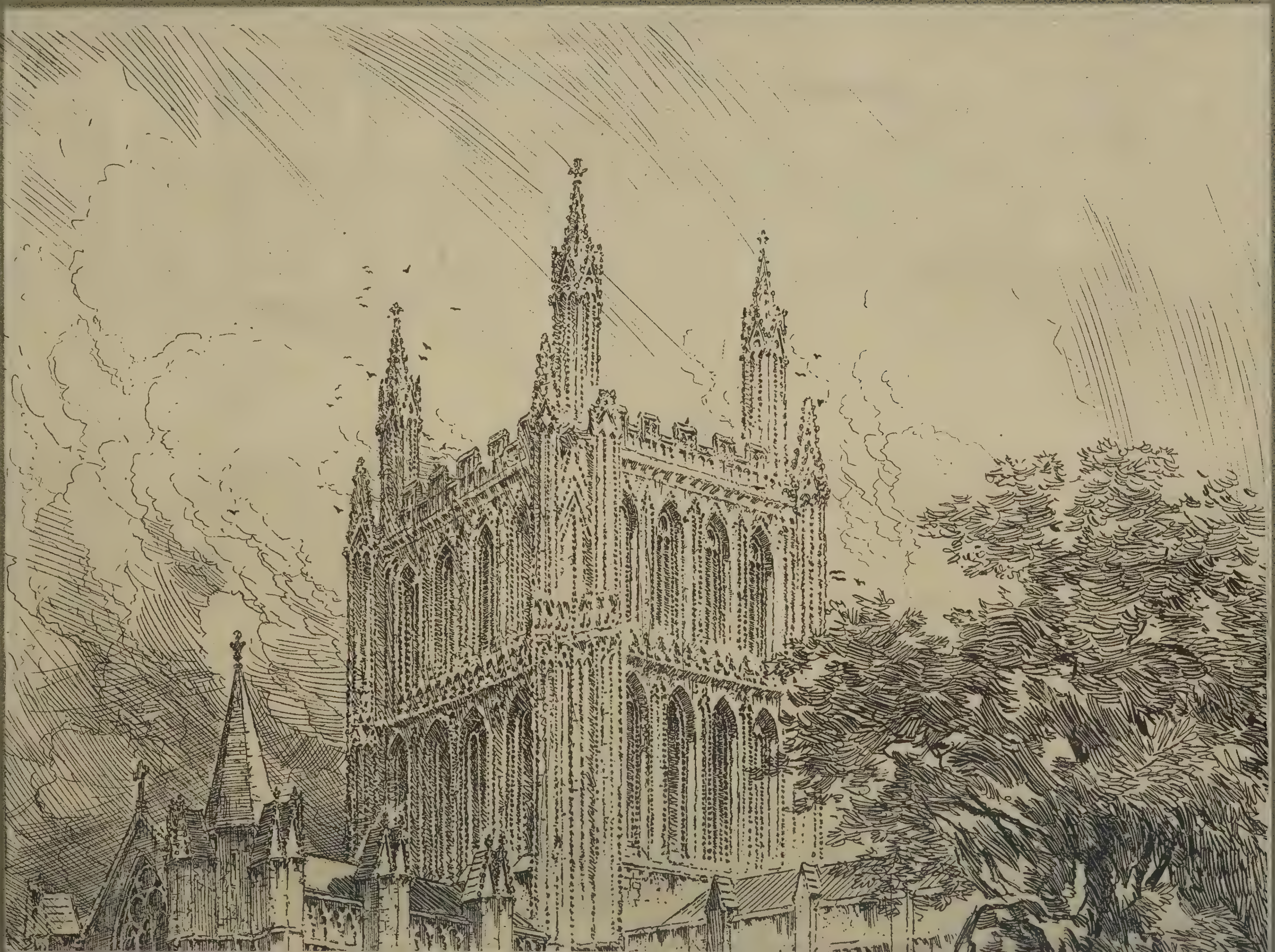

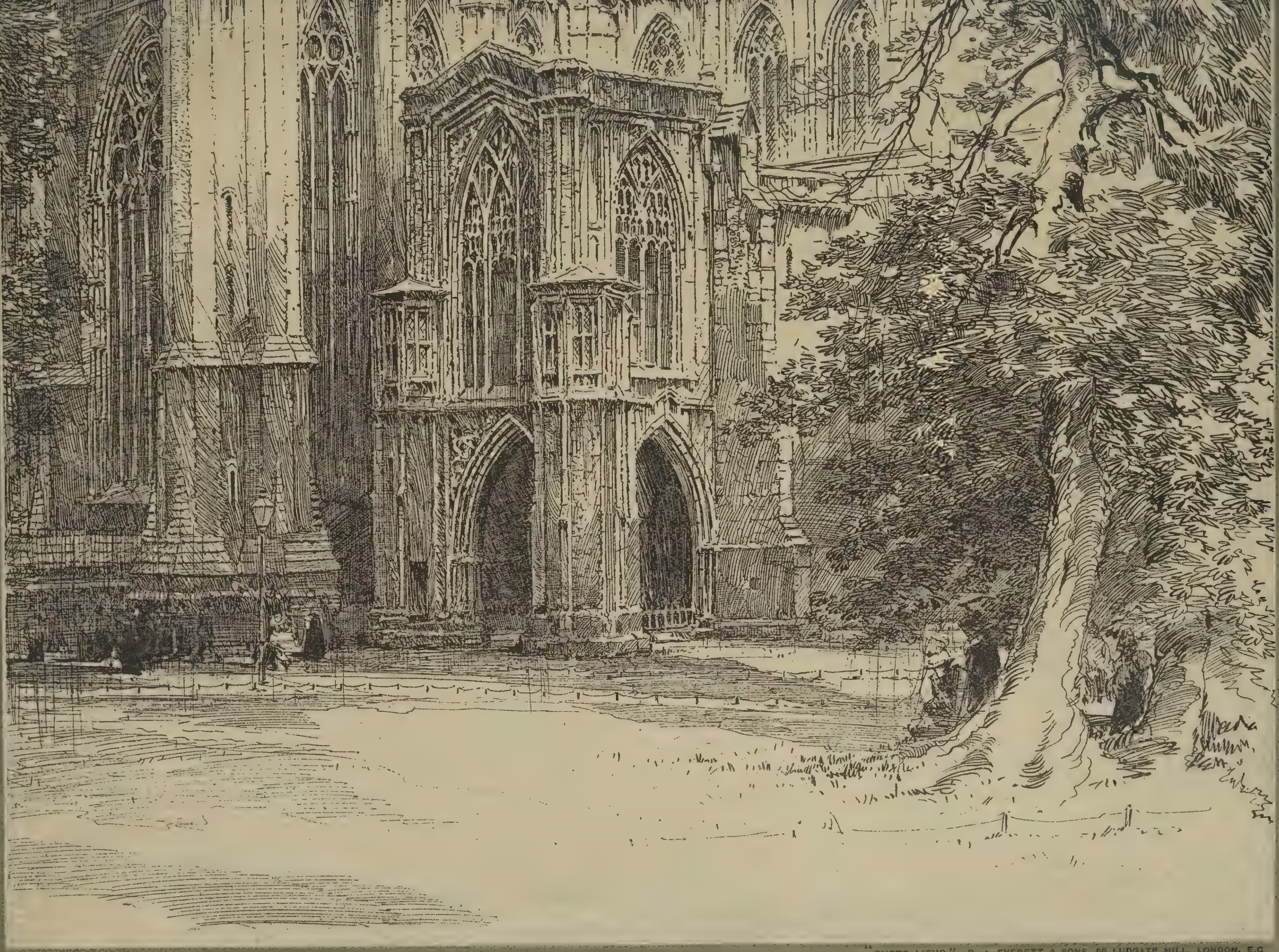

"PHOTO-LITHO." R. J. EVERETT & SONS, 56 LUDGATE HILL, LONDON, E.C

DRAWINGS OF ARCHITECTURE: HEREFORD CATHEDRAL, FROM THE NORTH-WEST. BY HEDLEY FITTON.

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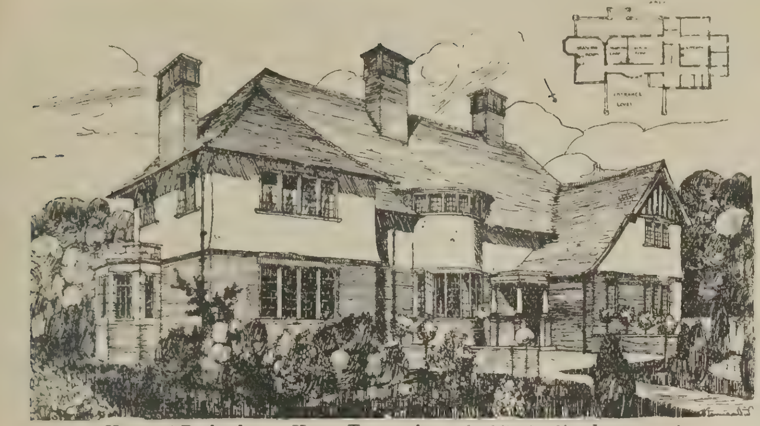
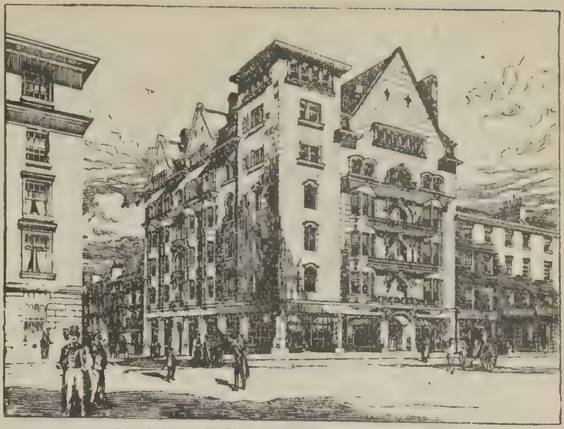


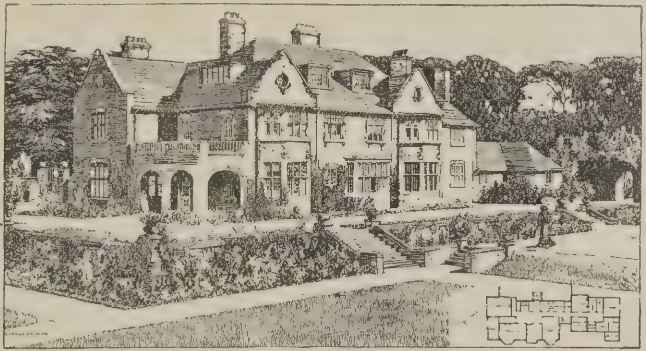
House at Beckenham. Henry Tanner, junr., Architect. (Academy, 1903.)



Marlborough Chambers, Jermyn Street, London.
Reginald Morphew, Architect.

**Buildings in London.** During the year the work of building the new Government offices in Whitehall has made considerable advance, and the erections have now been carried up to the second storey. There is yet much to be done, however, which fact will be the more appreciated when it is stated that the new War Office and the third Admiralty block will not be completed before the end of June, 1906, and the new offices for the Local Government Board not before June, 1907; while the Royal College of Art at South Kensington will not be finished till June, 1905, and the Victoria and Albert Museum not till February, 1907.

In the West End many new blocks were erected, such as Marlborough Chambers, in Jermyn Street.

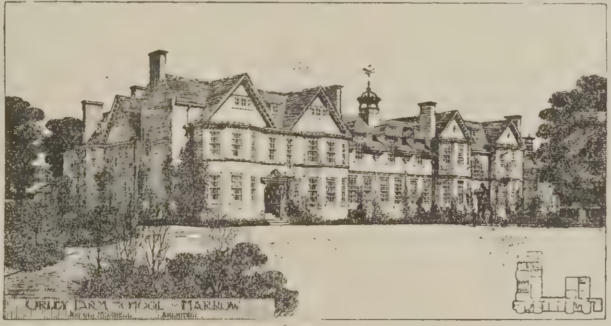


"Oakhill Drive," Surbiton. Walter E. Hewitt, A.R.I.B.A., Architect.

In Piccadilly the demolition of the Walsingham House hotel, next to the Green Park, was begun, to make way for the new Ritz Hotel (in connection with which the Council sanctioned a colonnade, which will add to the amenities of Piccadilly), and the fate of St. James's Hall was also sealed, it having been decided to build the Majestic Hotel on the site.

The new Coliseum at the bottom of St. Martin's Lane was begun (Mr. Frank Matcham, architect).

Going citywards we have to record the new Baptist Church House at the corner of Southampton Row, and several new blocks of business premises on Holborn, more particularly the huge new offices of the Prudential Assurance Co.



(Academy, 1903.)

At Newgate, during the demolition preparatory for the new Sessions House, a most interesting section of the old Roman wall, dating back to A.D. 300, was brought to light, in excellent state of preservation.

(Academy, 1903.)

In St. Mary Axe the new Baltic and Shipping Exchange was opened (Mr. T. H. Smith, architect), and huge new blocks of business premises in Finsbury Square.

The Lyceum Theatre was put up for auction in May, but not sold. It was designed by Beazley, who also designed St. James's Theatre. There was much discussion among the directors of the company as to what should be done with the building; and eventually it was decided to turn it into a music-hall.

Towards the end of February their Majesties the King and Queen paid a private visit to the L.C.C. dwellings at Millbank, Westminster, where seventeen blocks have been erected at a cost of £200,000, providing accommodation for 4,430; and it is worthy of note that Her Majesty's suggestion about the provision of more cupboards has been carried out in other new dwellings erected by the Council.

During the year Clifford's Inn, that interesting relic of Old London between Fetter Lane and Chancery Lane, was put up for auction and sold for £100,000 to Mr. William Willett, a well-known London builder, who, it is understood, will erect business and office premises on the site.

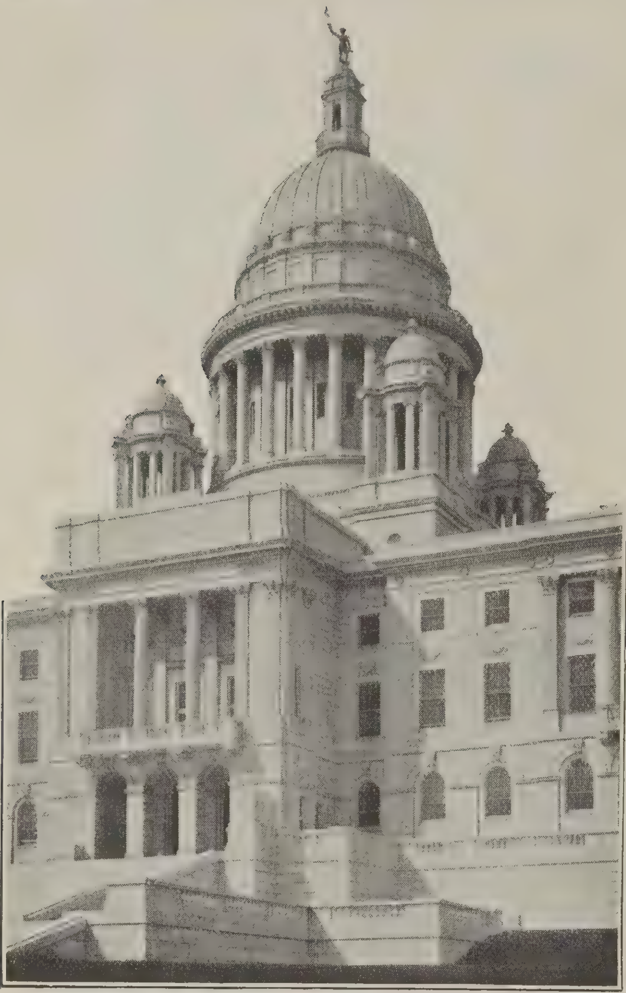
The mosaics of the Albert Memorial having become dimmed, a restoration was undertaken.

Work was begun in earnest on the National Memorial to Queen Victoria in front of Buckingham Palace, but it is greatly to be regretted that the course of the roads around it was altered, so that instead of being outside the colonnade they are now within it, quite destroying all sense of quiet which the "Queen's Garden" would have secured. This alteration could not have been done for motives of economy, as no economy is effected.

**The Penrhyn Strike.** The strike at the Penrhyn quarry was settled in November by the men agreeing to Lord Penrhyn's views — virtually the strike turned on the point as to whether Lord Penrhyn or the workmen's committee should have the main direction. It was a most unfortunate strike, having lasted three years, and it caused a very great deal of suffering. In wages alone it is estimated that the strike cost the district £364,000, while, as another aspect of the affair, there was a large importation of slates, which, it is feared, has permanently injured the North Wales trade.

**Lightning Research.** In March the Lightning Research Committee, which was appointed by the R.I.B.A. and the Surveyors' Institution about three years ago, issued an interim report on its investigations. It is worthy of note that out of sixty cases recorded by the Committee in 1901 no fewer than twelve were of buildings provided with some form of lightning conductor. The complete report of the Committee is expected to be issued shortly, and possibly it will help constructors to a better and more certain system of protecting buildings from lightning.

**The Mosely Commission.** Attention was drawn to labour in America as compared with England by the report of the Mosely Commission in the Spring. Mr. Taylor, dealing with the bricklaying, said that the American work was so different in character and generally so much rougher than our own, that to make a proper comparison was very difficult; but in his view the British bricklayer gives better value for his money than the American, the contrast being between a smaller quantity of better quality for a low wage and a larger quantity of lower quality for a higher wage. Mr. Deller, speaking of the plastering, also drew attention to the inferiority of the American work as compared with English, though the American plasterer undoubtedly covered more ground. Facts prove that the claims of superiority made on behalf of American work, excepting those of speed, are grossly exaggerated.



The Rhode Island State House, Providence, R.I.
McKim, Mead and White, Architects.

**Personal.** In June the Royal Gold Medal was presented to Mr. Charles Follen McKim, of New York, for his executed works as an architect. Mr. McKim is one of the leading architects of America, and has carried out a number of important buildings. He is the architect of the Rhode Island Capitol Building; the restoration of White House was also carried out under his direction.

The new White House, Washington: South Front.

In the summer Mr. Aston Webb became an R.A., taking the fauteuil of Mr. Alfred Waterhouse, who had resigned his place among "the Forty" owing to prolonged ill-health. Mr. Webb was also elected a corresponding member of the Société Centrale des Architectes Français.

Mr. C. A. Nicholson succeeded to the baronetcy of his father, Sir Charles Nicholson, of Sydney, N.S.W., who died in November.

Lord Windsor and Lord Balcarres were elected honorary associates of the Institute.

Mr. H. Stuart Jones, Fellow and Tutor of Trinity College, Oxford, succeeded Mr. Rushforth as director of the British School at Rome, Mr. Rushforth having been obliged to retire owing to ill-health.

Among the Birthday honours was that for Mr. Henry Tanner, principal architect to the Office of Works, who was made a Companion of the Imperial Service Order.

Mr. Percy E. Nobbs was appointed to the McDonald Chair of Architecture at McGill University, Montreal, vacated by Professor Capper, who came over to the newly-constituted Chair of Architecture at Owens College, Manchester.

Professor Simpson was appointed to the Chair of Architecture at University College, London, in succession to the late Mr. T. Roger Smith.

Mr. J. J. Burnet was elected a corresponding member of the American Institute of Architects.

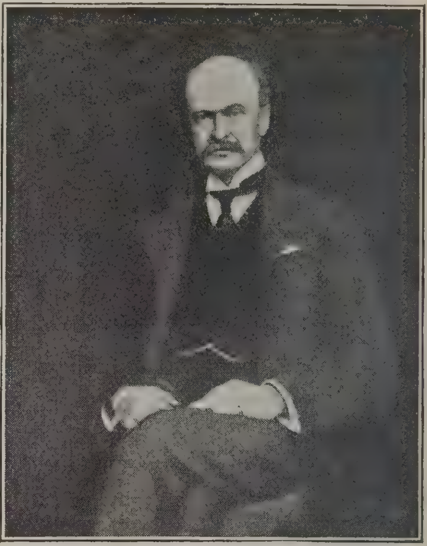
Mr. R. S. Lorimer became an Associate of the Royal Scottish Academy.

Mr. William Glover gave £1,000 in Consols to the Northern Architectural Association.

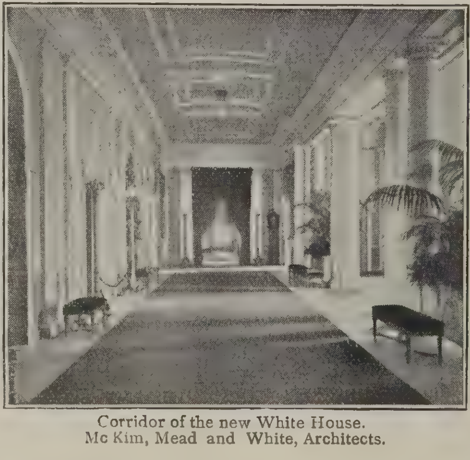
**Deaths.** In February Mr. F. C. Penrose died. He was in his eighty-fifth year. As a practising architect he left nothing of special interest—his best-known building is perhaps the choir school in Carter Lane, off Ludgate Hill—nor was he particularly notable as surveyor to St. Paul's Cathedral, in succession to Prof. Cockerell, which is a post not likely to draw out any man's abilities, other than those of watchfulness. His whole life was engrossed with Greek architecture, and it is to him we owe the knowledge of all those optical refinements in Athenian buildings which are as astonishing as they are ordinarily imperceptible. The curve of the stylobate to the Parthenon is not there as a relief from the straight line, but to correct the optical illusion which a long straight line creates by its apparent sagging; the ridiculous adaptation of this principle by many modern architects results in columns aggressively entasized.

Mr. Penrose was also a student of astronomy and the orientation of temples, and one of the last things to which he devoted attention was the orientation of Stonehenge, where he carried out researches with Sir Norman Lockyer. A tablet has been subscribed for by his brother architects, and will be fixed in the crypt of St. Paul's in memory of an architect having a great intellect and a peculiarly analytical faculty.

On March 11th Prof. T. Roger Smith died. He had only just resigned the chair of architecture at University College, London, to which he was appointed in 1879. He was joint-author with Mr. Slater of "Classic and Early Christian Architecture" and of "Gothic and Renaissance Architecture" with Sir Edward Poynter. His "Acoustics" is still perhaps the best practical book on the subject.

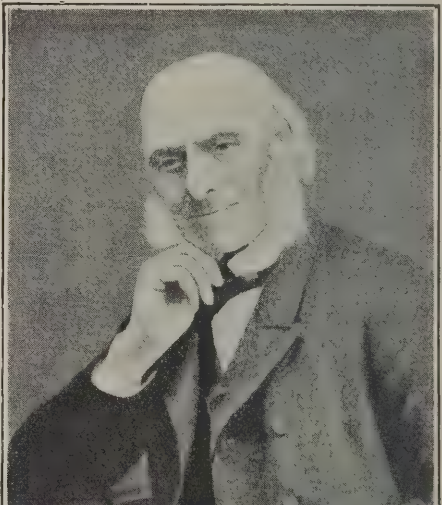


C. F. Kim, Royal Gold Medallist, 1903.



Corridor of the new White House.
Mc Kim, Mead and White, Architects.

Mr. William Botteril, of Hull, one of the best-known architects of the East Riding, died in April.

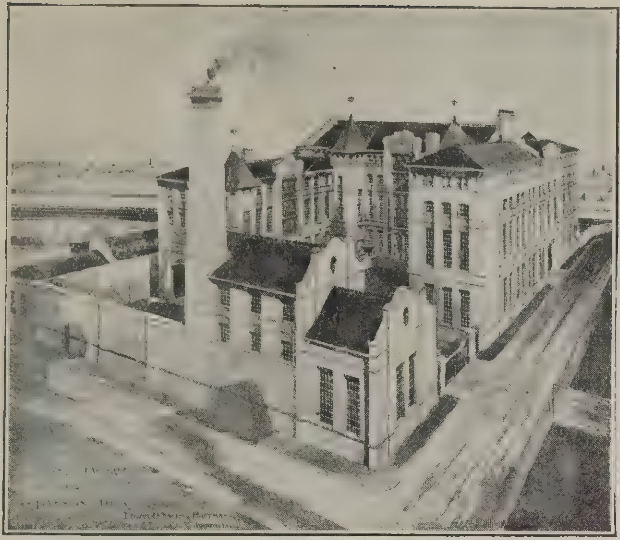


The late F. C. Penrose.

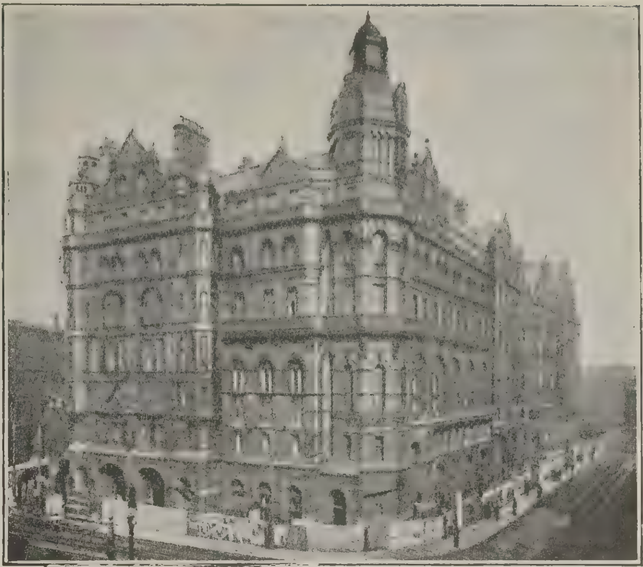
In June Mr. Bruce Price, the well-known American architect, died in Paris, and Mr. Olmsted, the most prominent landscape architect of America, died in August.

In November Mr. Silvanus Trevail, J.P., F.R.I.B.A., ex-president of the Society of Architects, committed suicide in a G.W.R. express near Luxulyan while temporarily insane. He had been suffering from bad health and depression of spirits.

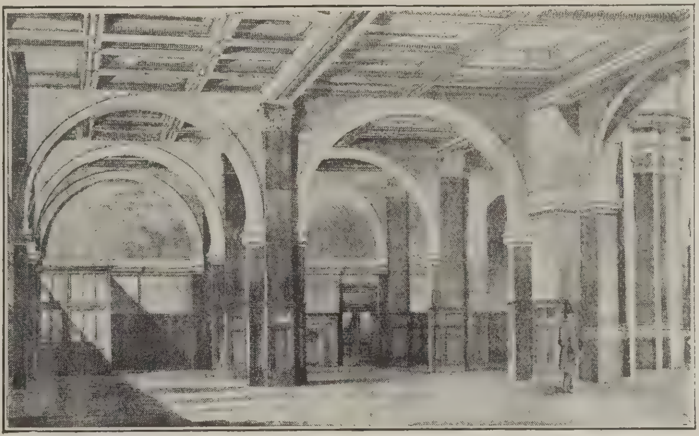
**Decorations of St. Paul's.** During the year the decorations of St. Paul's Cathedral proceeded according to Sir William Richmond's scheme, work being mainly devoted to the base of the dome and the gallery. Sir William took occasion to explain his views on the matter last March. He then said that he had made up his mind from the first what the decorations should be—that they should be laid *in situ*, not "that odious modern invention, paper mosaic," and that they should be laid by Englishmen, nineteen of whom he trained in his back garden—"and I have never seen such fine mosaic work in any country in the world as my Englishmen executed in the four quarter-domes of St. Paul's." Sir William started with thirty colours, then reduced them to fifteen, and finally to five.



New Factory for Shannon, Ltd., Dalston, London.
Edwin O. Sachs and Hoffman, Architects.



The Midland Hotel, Manchester. Charles Trubshaw, F.R.I.B.A., Architect.

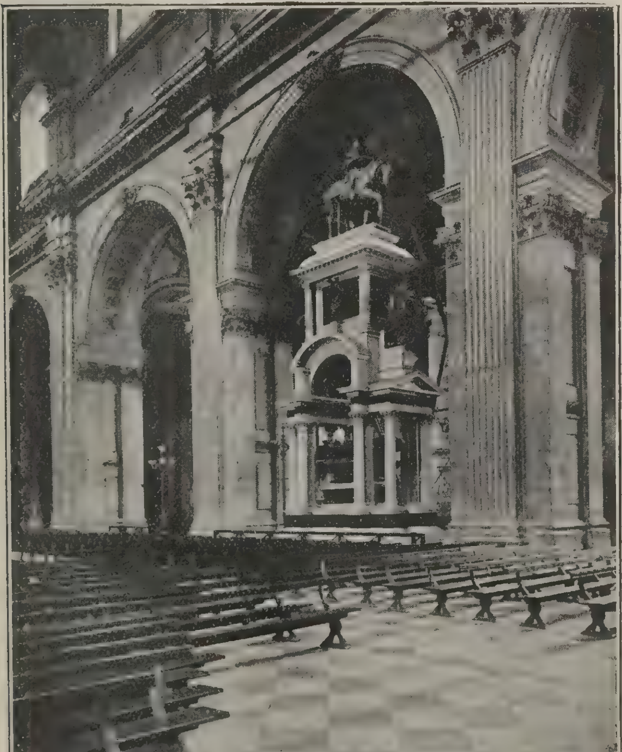


Extension to London Stock Exchange. R. Langton Cole, F.R.I.B.A., Architect.
(Carried out during 1903.)

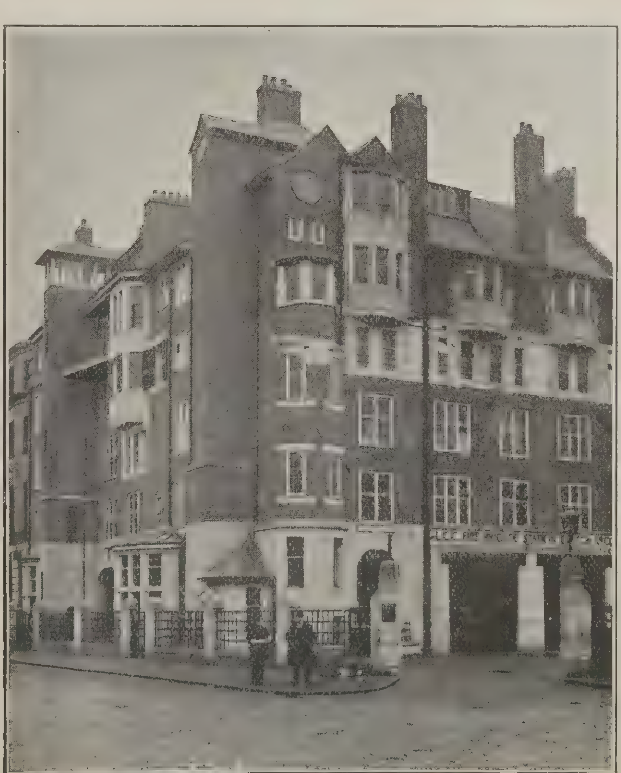
**The Wellington Memorial.**

A very considerable discussion arose over the proposed completion of the Wellington Memorial in St. Paul's Cathedral. This had already been proceeding for some time when the year commenced, but received additional impetus when Mr. Tweed began work on his plaster cast of the equestrian statue of the Duke which Alfred Stevens had intended should crown the memorial. The story has been told many times, so that it is only necessary to recall the fact that for years the memorial was relegated to the obscurity of one of the chapels in the cathedral, whence it was removed to its present position in the nave by the efforts of Lord Leighton and a small body of enthusiasts who recognized the maltreatment which England's greatest sculptor had received at the hands of the Dean and Chapter.

The memorial remained incomplete for years, though the full-size plaster model of the horse and its rider stood hidden in the vaults of the cathedral, dusty and dirty, and headless (the cast having been bought by Mr. Hugh Stannus at the time of the sale of the sculptor's effects, and the head of the Duke sawn off and removed by Mr. Stannus for safety's sake). The original model was deficient in two things—the tail and one of the hind hoofs—though these are shown in the small scale



The Wellington Memorial in St. Paul's Cathedral.



New Fire-Brigade Station, Euston Road, London.
W. E. Riley, Superintending Architect, L.C.C.

The Belgrave Hospital for Children, Clapham Road, London.
H. Percy Adams, F.R.I.B.A., Architect.

model in South Kensington Museum. However, it was in regard to these that the controversy chiefly raged, for the private committee, consisting of the Bishop of Stepney, Mr. D. S. MacColl, Lord Hardwicke, Mr. Harold Hodge and Mr. Herbert Trench, had commissioned Mr. John Tweed to take a plaster copy of Stevens's cast and finish it. Mr. Tweed's plaster model was placed in position on top of the memorial at the end of June, and was then examined by all who cared about it: and, putting aside the question as to whether the head should face west or east, no objections were openly raised against the work which Mr. Tweed had done; so that it was taken back to the sculptor's studio at Chelsea, and we hope soon to see the statue in place.

(Completed during 1903.)

At St. John's Wood, London, N.W. Unveiled in September.

**Events Abroad.** Among events abroad we may note the rebuilding of St. Mark's Campanile at Venice—or rather the clearing away of the debris of the old tower, for at the present moment, owing to the differences and jealousies which have arisen, and the inefficient way in which the foundations have been dealt with, the actual rebuilding has not commenced. Commendatore Boni first had the matter in hand, but he gave it up and went back to his excavations in the Roman Forum. He was succeeded by Signor Beltrami, a well-known architect and engineer of Venice, whose name was on the foundation-stone of the new tower which was actually laid. But it has since been found that the old foundations are not sufficiently stable to bear the weight of the proposed new erection, so that the area has to be piled, which work is now proceeding. Signor Beltrami is no longer in charge of the operations, which are being superintended by a committee of five architects, who, it is reported, are not in such general agreement among themselves as would seem desirable.

At Washington the remodelling of White House was completed, this consisting chiefly, on the exterior, in restoring the long colonnaded wing on the east side of the building, which was removed during the administration of President Johnson. The entire project was to put the mansion in the condition it originally occupied as designed by Hoban. The restoration, however, was not the only one in the history of White House, for it was restored under Hoban's directions after the attempted destruction by the British troops in 1814, while nine years later the south portico was added, and the grand portico in 1829.

In France the important extension of the Beaux-Arts instruction in architecture to the chief towns of the provinces was begun, the object being to place students of the regional schools on the same footing as their fellow-students in Paris. During the year a commission made a tour of the provinces in order to settle details. The Government will grant a subsidy to each school, and it is hoped that the scheme will result in considerable benefit to French architecture.

At Amsterdam the new exchange building was opened by Queen Wilhelmina in August, a notable building embodying the best of that movement which in its various aspects is associated with arts and crafts and "art nouveau."

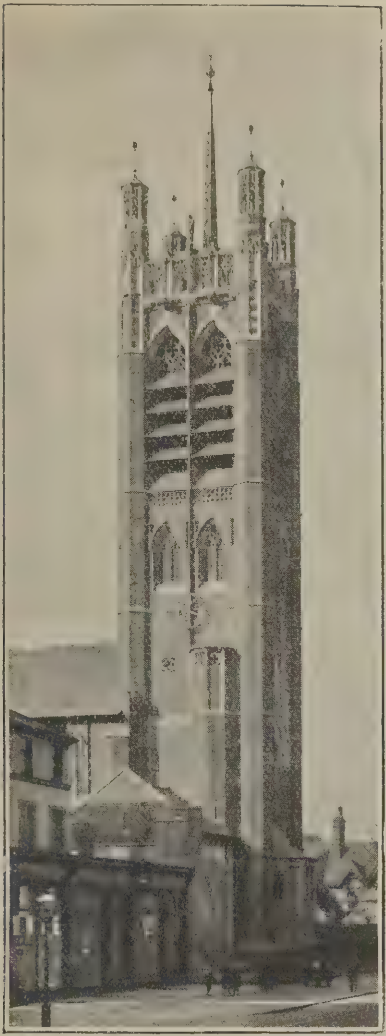
In New York the great Williamsburg Suspension Bridge, spanning the East River from Brooklyn, was finished, at a cost of £2,000,000. It is 7,200ft. long with a centre span of 1,600ft., 135ft. above high water. The bridge is 118ft. wide.

Exchange Building at Amsterdam.
H. P. Berlage, Architect.

**The new Academy Rules.** New rules were adopted by the Royal Academy for admission to their schools. These rules will come into operation next month. There is no restriction as to age, but no student can compete for scholarships, prizes or medals who is more than twenty-eight years of age (formerly the limit was fixed at twenty-five). Certain alterations are made in regard to the architectural works required for admission, and in future architects will have to pass an examination in perspective and the history of architecture.

Entrance to a Public Building

W Hilton Nash, Architect. (Academy, 1903.)

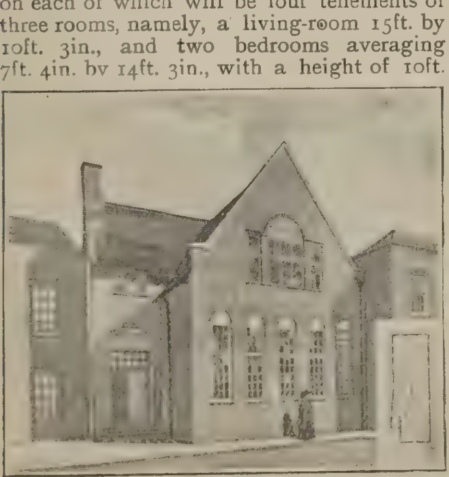


Church of St. Agatha, Birmingham.
W. H. Bidlake, Architect.

**Buildings in the Provinces.** It is of course impossible to notice a tithe of the buildings which have been begun or completed in the provinces during the year. A brief summary may, however, be given of the chief of them, though some are already mentioned under other headings:—

At Liverpool the new head-office building for the Royal Insurance Co., at the corner of North John Street and Dale Street, was opened, Mr. J. Francis Doyle being the architect, with Mr. Norman Shaw as consulting architect.

At Liverpool also the Corporation began a number of concrete dwellings in Eldon Street as an experiment. The plans were prepared by the city engineer, Mr. John A. Brodie. The building will be of three floors, on each of which will be four tenements of three rooms, namely, a living-room 15ft. by 10ft. 3in., and two bedrooms averaging 7ft. 4in. by 14ft. 3in., with a height of 10ft. The rent will be 4s. a week for each tenement of three rooms.



Design for a Public Building. Sidney B. Caulfield, Architect. (Academy, 1903.)

The foundation-stone of the new Bluecoat Hospital at Liverpool was laid by Lord Derby in August. Accommodation will be provided for 250 boys and 150 girls. A prominent feature will be a central tower 125ft. high, carrying a clock and bells. Messrs. Briggs, Wolstenholme, Hobbs and Thornley are the architects (see p. 293).

At Belfast the City Hall, in the centre of Donegall Square, was finished externally. The building is Classic Renaissance in style, with a principal façade of 300ft. and a great pediment at the centre, the sculpture in which, descriptive of Hibernia encouraging the local industries of shipbuilding and linen manufacture, is to be executed by Mr. Pomeroy. Above this the peristyled dome, rising to a height of 175ft., forms the crowning feature of the architectural composition. The expenditure on the building will be £250,000.

The new Naval College at Osborne was opened by the King in August. Dormitories of one storey only are provided. The plans were prepared by the Office of Works.

At Dartmouth, work was proceeded with on the new Royal Naval College designed by Mr. Aston Webb, towards the completion of the building at the end of 1904.

At Aberdeen the extensions to Blairs College were completed, at a cost of £30,000, from designs by Mr. R. G. Wilson, of Aberdeen.

At Hull the building called "Victoria Mansions" was erected, virtually a Rowton house, with 400 cubicles. (Messrs. Gelder & Kitchen, architects, Hull).

At Aberdeen the new Greyfriars Parish Church, forming part of the splendid pile of buildings on the grounds of Marischal College, was opened in August, Mr. A. Marshall Mackenzie being the architect. The cost was £18,467.

At Manchester the new Midland Hotel was finished in the autumn, a very extensive building designed by Mr. Charles Trubshaw, F.R.I.B.A., architect to the Midland Railway Co. There are 400 bedrooms.

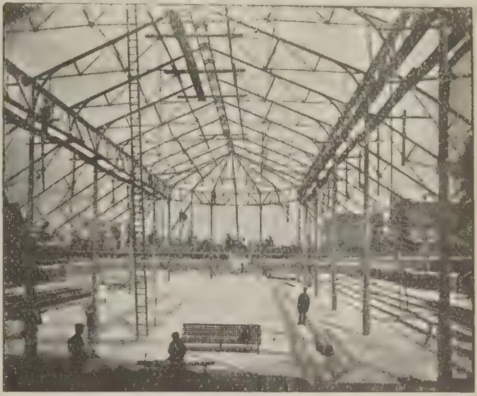
The buildings of Christ's Hospital, Horsham, were completed, and the great new organ installed in the chapel.

At Welbeck Abbey the Oxford wing destroyed by fire about three years ago was restored under the superintendence of Messrs. Ernest George & Yeates.

At Oxford new roofs were constructed over the halls of Magdalen College and University College, the new buildings of Hertford College and new Fellows' houses to Merton College were completed, the balustrade crowning the Old Ashmolean Museum was removed, and it was decided to restore and open up the Chapel of Our Lady on the walls.

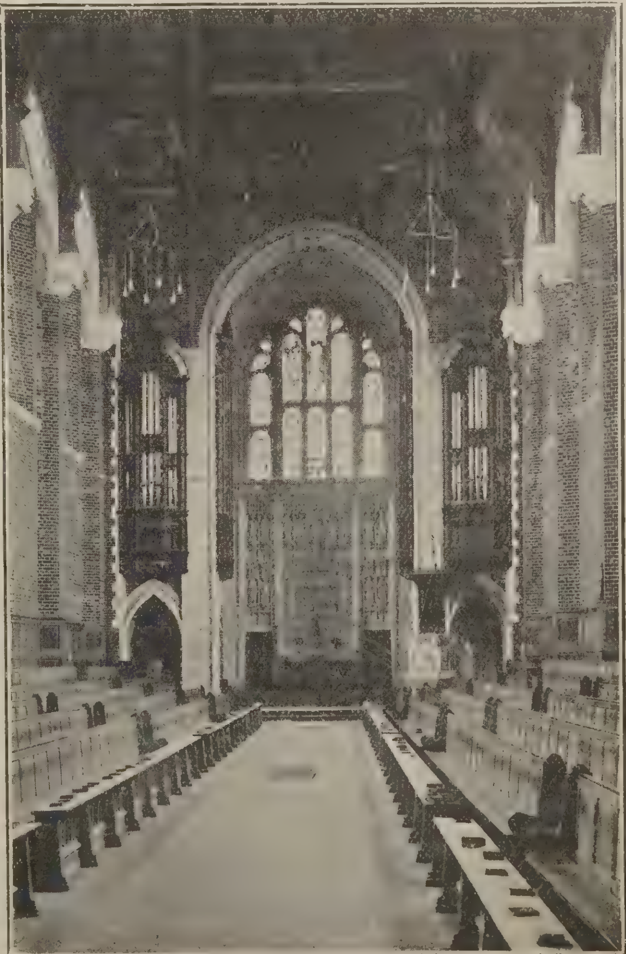
At Birmingham, the contract was let in December for the second block of the University buildings. This will be carried out by Mr. Thomas Rowbotham at a cost of £250,000. The Central Wesleyan Hall, in Corporation Street, was opened in October.

At Port Sunlight, the open-air theatre, for Messrs. Lever Brothers, was opened in June. The steel and iron framework was supplied by Messrs. E. F. Blakeley & Co., of Liverpool.



Open-air Theatre, Port Sunlight.

**The Fire and Building Trades' Exhibitions.** The International Fire Exhibition at Earl's Court was opened in May and proved a success. The exhibits were both extensive and thoroughly representative of the several countries, and the building exhibits included the latest systems of construction and details of fire-prevention which have latterly been introduced by business firms. The historical side was also fully represented by a large number of photographs, engravings and



The Chapel, Christ's Hospital, Horsham.
Aston Webb and E. Ingress Bell, Architects.

Ernest George and Yeates, Architects.

paintings, and by a most interesting collection of fire-equipments of various ages. In July an international congress was held at the exhibition, when many valuable papers were read by representatives of various countries. The International Building Trades' Exhibition was held in June at the Agricultural Hall, Islington, and proved more extensive than any of its predecessors.

**The Building Trade.** The year has been a very dead one for the building trade. Money has been tight and trade bad; this has consequently affected builders very much, so that their operations have not been extensive. In London a good deal of building is always in progress, but reports from the provinces speak of a slack condition of affairs, with no very hopeful outlook for the coming year.

**The Stratford Cottages.** A considerable discussion centred around the proposed demolition of the three old cottages next to Shakespeare's birthplace at Stratford-on-Avon, and the erection of a Carnegie library on the site. The matter was brought to public notice by Miss Marie Corelli, who displayed singular recklessness in her statements. After the dispute had subsided Mr. Sidney Lee declared that no rational archæological interests were jeopardized, and so far from "destroying historic Henley Street" exactly the opposite was being done. The trustees and the corporation, he said, were permanently preserving in houses under their control all structural work which had any kind of archæological interest, and the process of modernizing Henley Street had been arrested, and "some careful and scholarly restoration" made practicable. The new library, we understand, is to be incorporated in one of the old houses.

**Archæological Discoveries** The archæological discoveries of the year include additional finds at Crete, where "the germ of all future theatres" was uncovered, under the direction of Mr. Arthur Evans.

At Abydos, Professor Flinders Petrie found ten successive temples, ranging in age from 5000 to 500 B.C., about 20ft. below the old temple site, which Mariette had worked upon and abandoned.

At Nippur the American expedition under Professor Hilprecht was singularly successful in excavating the great Temple of Bel, the results of which modify all previous conceptions of a Babylonian temple.

At Beni Hasan a gallery of smaller rock tombs than those which have made the hillside famous were discovered, and the doors of some of them were opened after having been closed for 4,000 years.

Excavations were also carried out in Palestine.

In the Roman Forum the great discovery of the year has been that of a large base of concrete which must at one time have supported a colossal monument (in all probability an equestrian statue of Domitian). Another discovery in Rome was that of the base and some fragments of the Ara Pacis Augustæ, which commemorated the return of Augustus from the western provinces in 13 B.C. and the completion of his proudest achievement—the establishment of the Pax Romana throughout the empire.

At home, work was continued at Silchester, Caerwent and other Roman sites.

So far as the foreign excavations are concerned, the year is remarkable for the convergence of the testimony of independent workers in different fields, for the investigations of Professor Flinders Petrie in Egypt and of Mr. Arthur Evans in Crete have been found to be mutually corroborative, and lead to new conceptions alike of Egyptian and early Hellenic civilization.

**New Associations.** Early in the year the Quantity Surveyors' Association was formed, and it now has a membership of about 150, with Mr. Walter Lawrance as president. The Surveyors' Institution, however, resents the multiplying of associations for members of the same profession by creating separate organizations for each branch, and especially the setting-up of competitive systems of examination.

In February the London Architectural Vigilance Committee was formed to influence public opinion and, if necessary, protest against the action of public authorities in refusing to consider qualified advice on the æsthetic as well as the sensible treatment of public works of art; and also to constitute a body of advisers; but, with the exception of a quibble between the secretary and Mr. Emden over some painting work done at Somerset House, we have heard nothing more of it.

A Society for the Encouragement of Art in South Africa was formed under the ægis of Sir William Richmond, which, being a painters' movement, forgot the claims of architecture. The utility of such a society at a time when the labour problem remains unsettled is extremely doubtful.

The Building By-laws Association was also formed during the year, its chief object being to get the present onerous by-laws in rural districts altered, an object deserving of success.

The National Art Collections Fund (analogous to those already existing in Paris and Berlin) was formed to secure pictures and other works of art for our national collections.

**Ancient Lights.** The Bill to amend the law relating to easements of light, drawn up by the joint committee of the Royal Institute of British Architects and the Surveyors' Institution, was read a first time in the House of Commons on June 22nd; it will, presumably, be introduced in the next session of Parliament, when it is likely to be sanctioned.

**Plumbers' Registration.** Plumbers' registration has been so long before the public that one would almost expect it never to make any headway. Last February, however, the Bill was read in the House of Commons a first time, and in November an important conference between the Plumbers' Company, representatives of the larger water authorities of the country, and of the R.I.B.A. was held at the Guildhall, when a resolution was passed approving the efforts of the Plumbers' Company to secure the more efficient training of plumbers and the registration of qualified men, and pledging support to the efforts being made to secure the necessary legislation: while a further resolution was passed by the representatives of the R.I.B.A. and the water authorities in favour of preference to registered plumbers. The measure, therefore, has the influential support of the bodies chiefly concerned, and it is probable that when next brought before Parliament it will be passed.

**All Hallows.** The fate of All Hallows, Lombard Street, London, was hanging in the balance when the year began, the Bishop of London not having declared at that time what action he proposed to take. Then came his decision that money was needed to provide for the requirements of the 40,000 people who came into the diocese every year; which, in his opinion, outweighed the claims for the retention of this City church by Wren. All Hallows contains a great deal of excellent woodwork, set off by the vaulting; its age alone substantiates a very good claim for its preservation, but when, in addition, it is by the hand of our greatest church architect, the claim becomes doubly strong. In November came the actual crisis in its history, which it passed successfully, the four parishes of All Hallows having rejected the proposal to sell the church: we may therefore rest satisfied that it is in no danger of immediate demolition, though the spirit which the controversy exposed does not augur very happily for the future, in so far as the claims of Wren's churches are concerned. Maybe such claims are wrapped in much sentiment. Still, these churches are not to be handled like so much brick and stone of no particular worth. It is not often that a nation is blessed with a Wren, and we may justly cherish, and do all we can to preserve, those beautiful works of his which have come down to us through many generations.

All Hallows Church, Lombard Street, London.

# LONDON HOSPITALS.*

## The Rebuilding of "Bart's."

By Sir HENRY BURDETT, K.C.B.

IN the paper which I read before the Hospitals Association on March 3rd last I ventured to point out that if King's College Hospital were removed to Camberwell and St. George's or the Westminster to Wandsworth, or some other suitable site in the south-west district, the question of hospital sites and population in London, so far as the great general hospitals and medical schools are concerned (with one exception), would be placed upon an adequate basis. The exception was St. Bartholomew's Hospital, which I merely referred to in general terms, because the various financial and other difficulties involved were then under the consideration of the Governors, and, until they had formed some definite scheme, I thought it only fair to abstain from comment.

Many things have happened since I read my paper. The Governors of King's College Hospital have decided to remove to Camberwell, have obtained a suitable site in that district, and have made provision for an appeal for the necessary funds. The Governors of St. George's Hospital have appointed a special committee, which is engaged in the consideration of the problem of how best to provide adequately for the present and future needs of that important hospital. The Governors of St. Bartholomew's Hospital have agreed to a scheme formulated by the Lord Mayor's Committee, which has given rise to much criticism, and the matter will be brought before a meeting of the citizens of London to be held in the Mansion House on January 26th.

In London

### The Medical Schools

are, with two exceptions, attached to and intimately connected with hospitals, the exceptions being King's College and University College, which are entirely separate bodies, quite independent of the hospitals which bear their names. Only quite recently all the medical schools, with these two exceptions, were within the premises of the hospitals to which they are attached.

At Charing Cross this arrangement does not now obtain, the medical school having been removed to a separate site across the street, which is connected with the hospital by a subway under Chandos Street.

In none of the London schools will be found such complete and extensive buildings as are to be seen at Edinburgh, Glasgow, or at Owens College, Manchester; and in many of the schools the plans show very particularly that the buildings have been added to from time to time as opportunity or funds would permit.

The four great medical schools of the metropolis are St. Bartholomew's, St. Thomas's, Guy's and the London.

There are also medical schools in connection with St. George's Hospital, Charing Cross Hospital, University College Hospital, Middlesex Hospital, St. Mary's Hospital, the Royal Free Hospital, Westminster Hospital and King's College Hospital.

### Site Areas.

As I have often maintained, the sites of the London hospitals, taken collectively, represent the best and worst features which could attach to hospitals in densely-crowded neighbourhoods. The thing to be aimed at is to have a site of sufficient area to provide at least 300ft. super. or, to meet modern hygienic requirements, 450ft. super. per bed. Each site should be self-contained—that is to say, it should be so placed as to enable the authorities to prevent the hospitals from being deprived of light and air by contiguous buildings. To ensure this result, it is desirable that every City hospital site should be entirely surrounded by streets of a reasonable width. Now, applying these tests, we find that of the eight smaller London general hospitals with medical schools—

St. George's has a total site area of 67,192ft., which gives an area of 191ft. to each of the 351 beds contained in the hospital.

The Westminster Hospital has a total site area of 27,500ft., and contains 205 beds, so that the site area per bed is 134ft.

The Royal Free Hospital has a total site area of 40,455ft., which gives a site area of 253ft. for each bed.

The Middlesex Hospital has a total site area of 81,947ft., and contains 307 beds, so that the area per bed is 267ft.

St. Mary's Hospital, on its original site, had a site area of 38,280ft. and contained 281 beds, which gives an area of 136ft. per bed. An addition to the site has been acquired, upon which new wards and other buildings are being erected, but, like St. George's Hospital, the site area per bed is never likely to exceed 200ft.

At Charing Cross Hospital the site area is 15,150ft.; it contains 175 beds, so that the site area per bed is only 86ft. In this case the figures may be slightly varied owing to recent reconstruction and extension, but I have not the later figures by me.

The University College Hospital is in process of rebuilding. The total site area is about 55,526ft. When completed it is to contain 400 beds, which would give an area of about 160ft. per bed. It will thus be seen that none of the smaller hospitals and medical schools have an area of anything like 300ft. super., much less of 450ft. super. per bed.

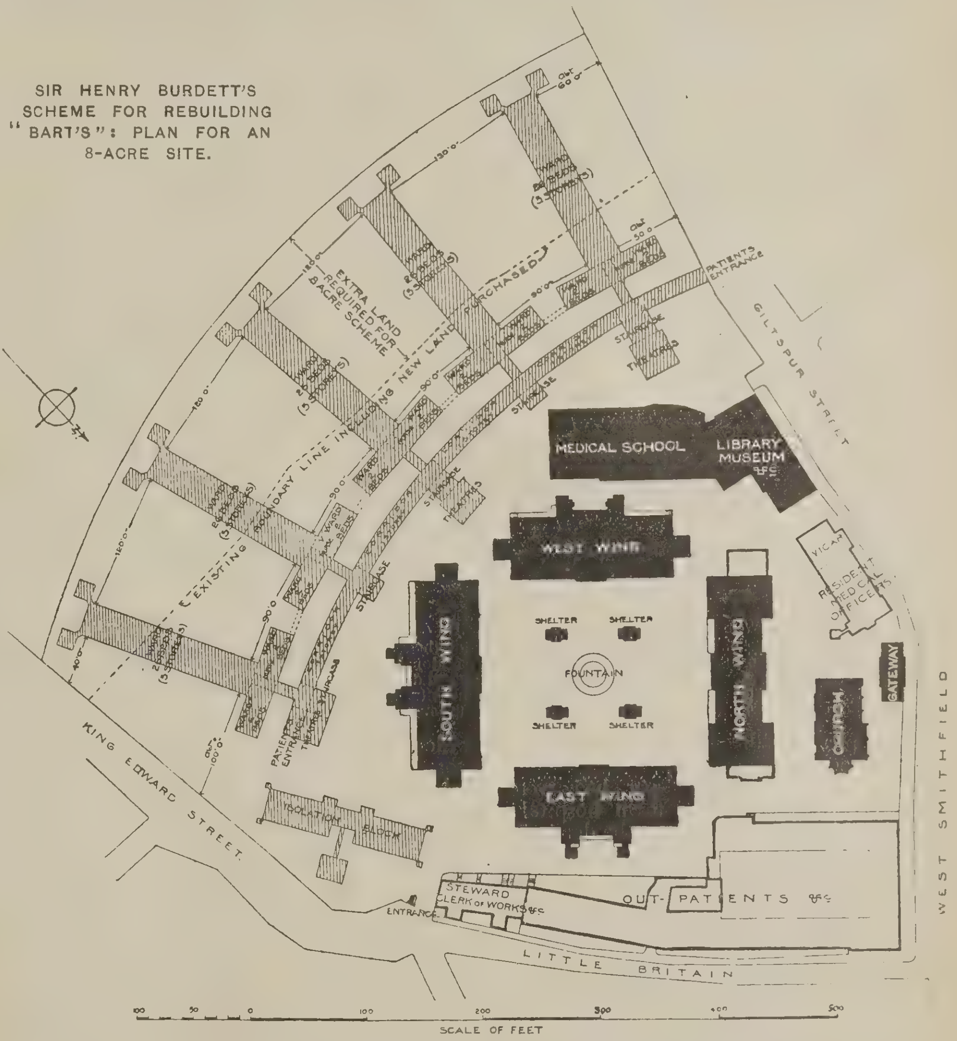
I will next pass on to consider the position of the four larger general hospitals with important medical schools attached to them. The main site of

### The London Hospital

is self-contained, being entirely surrounded by streets. Additional land has been purchased of recent years across the street, upon which further new buildings have been erected. The site on which the hospital proper stands contains 240,327ft., and has accommodation for 776 beds, showing an area per bed of 310ft.

### Guy's Hospital

has a site area of 237,103ft.; it has accommodation for 652 beds, and so contains an area of about 364ft. per bed. This site has been increased by the purchase of land to the north of the inquest room and mortuary, in addition to the separate site upon which the residential college has been erected at the corner of Maze Pond.



SIR HENRY BURDETT'S SCHEME FOR REBUILDING "BART'S": PLAN FOR AN 8-ACRE SITE.

### St. Thomas's Hospital.

The site of this hospital has on one side the River Thames throughout its whole length, and on the opposite side Palace Road, Lambeth. Nothing could be better than a site like this for a town hospital, except perhaps that its contiguity to the river may subject the wards to influences at certain seasons of the year which were best avoided. The total site area is 373,042ft., which gives an area of 652ft. per bed for each of the 572 beds which the original buildings could accommodate.

### St. Bartholomew's Hospital

originally had a total site area of 203,690ft. It provides accommodation for 674 beds, showing an area per bed of about 300ft. dead reckoning. It has recently purchased nearly two acres of land from the trustees of Christ's Hospital, which brings the total area up to 290,320ft., and will represent an area of about 420ft. per bed dead reckoning, providing the total beds are brought up to 700, as is proposed. I have used the words "dead reckoning" in connection with this hospital because the site is so crowded with a number of buildings.

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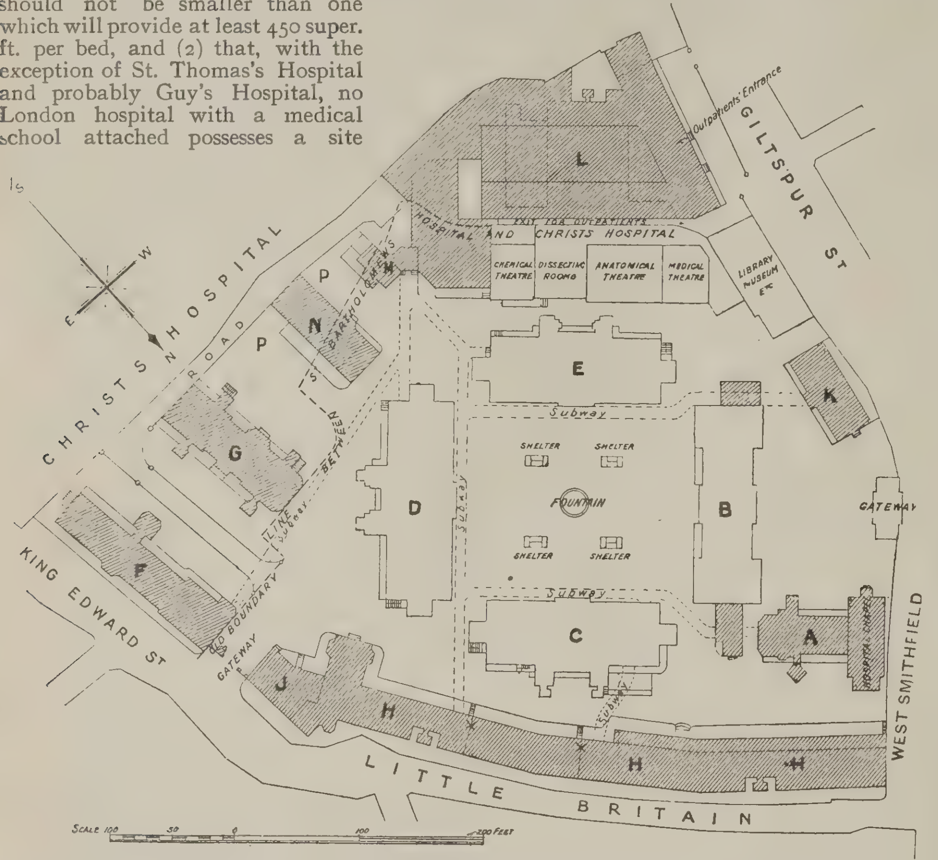
* A paper read at Charing Cross Hospital on December 3rd.

**Minimum Requirements.**

I have thus far shown, mainly by figures, (1) that the site area of a large general hospital with a medical school attached should not be smaller than one which will provide at least 450 super. ft. per bed, and (2) that, with the exception of St. Thomas's Hospital and probably Guy's Hospital, no London hospital with a medical school attached possesses a site which at present fulfis this essential requirement of modern science.



ST. BARTHOLOMEW'S HOSPITAL, WITH PROPOSED ADDITIONS (NEW BUILDINGS SHADED).

A, Pavilion for 68 beds; B, existing north wing, five operating theatres on third floor; C, D, E, existing east, south and west wings—will contain when altered 424 beds; F, pavilion for 102 beds; G, isolation pavilion, 70 beds; H, nurses' home; J, steward and clerk of works; K, pathological department, including inquest room, mortuary, P.M. room and laboratories; L, out-patients' department, hospital kitchen, dispensary and 10 surgical beds—total number of beds, 674; M, dwellings for head porter and fireman; N, resident medical officers; P, boilers, &c.

Formerly 300 super. ft. per bed were regarded as enough for a town hospital; but the continuous increase in the demands for special departments, and above all for the complete aëration of every building occupied by patients, has produced results which raise the minimum of efficiency to 450 super. ft. per bed.

In the case of a virgin site upon which a hospital and medical school can be planned in its entirety, it is possible to so arrange the accommodation in the various buildings that every available foot of site shall be utilized to the best advantage. In London, owing to the circumstances I have already referred to, with the exception of St. Thomas's Hospital, the medical school buildings have been added from time to time, and were probably not contemplated when the hospital buildings were first planned and erected.

I have taken out the figures, and I find that upwards of 56 per cent. of one site is occupied by buildings, although the ward blocks, theatres, &c., occupy less than 16 per cent. of the whole available area, against about 20 per cent., or one-fifth, of the site which is covered by medical school and kindred buildings. I mention this to show that whereas for a town hospital the unit has been, roughly, 100 beds per acre of site, if such a hospital has a medical school attached to it the unit must be increased to something like 50, or at the outside 60, beds per acre.

In these circumstances I welcome the scheme propounded by the Institute of Medical Sciences Committee of the University of London, which was adopted by the Senate in the Spring of the present year. This scheme provides for common courses of instruction for internal medical students, not only in chemistry, biology and physics, but in anatomy, physiology and pharmacology, which will ultimately relieve the hospitals from the necessity of providing accommodation, appliances and teachers for these subjects, as they have to do at present. It will also have the further advantage of greatly improving the hygienic condition of the sites of most of the great London general hospitals by freeing them from existing blocks of buildings, which will then cease to be necessary in connection with the medical schools.

**St. Bartholomew's Hospital.**

From the accompanying plan you will perceive that the architect who originally planned St. Bartholomew's Hospital deserves our admiration for his foresight and ability. As a matter of planning, the four ward blocks are unique in arrangement. They occupy the sides of a hollow square, but—and this is important—the buildings on each of the four sides are self-contained, entirely separate each from the others, and are so arranged as to facilitate the free circulation of air round each block and through the hollow square also.

These buildings were erected so long ago as 1730, at a time when it was usual to join all the buildings together when erecting a hospital on the hollow-square plan—a fact which marks the architect, whose name I have been unable to discover,* as a man of originality and power.

Since 1730 much has happened. The continuous growth of the work of the hospital and the requirements of medical education have caused the pavilions containing the wards to be gradually rendered less and less desirable as a residence for patients by the addition of a number of buildings never contemplated when the plan was originally carried out. And here I may state—for this is the plan which has been approved, I understand, by the Mansion House Committee—that if that plan is to be carried out as it stands, and £350,000 is to be spent in putting up new buildings which mtus have the effect of rendering these old wards double-backed and terribly faulty in regard to every modern hygienic requirement, as they in fact are, upon this site of a little over six acres the ward pavilions will less fulfil the hygienic requirements in regard to sunlight and air which were made so prominent a feature by their original designer than they did in 1730.

Now, I would ask you to consider, is it necessary to destroy St. Bartholomew's Hospital as a place for the reception of patients, which fulfils the conditions imposed by modern science and medical knowledge? What is the alternative? The addition of about an acre and a half of land to the present site. See what that will accomplish Here on this 8½ acre site (see plan on p. 301) you have the hospital converted into a modern one, perhaps the finest general hospital in the metropolis; and this, apart from the cost of the extra land (which some wealthy man of sufficient public spirit might give) can be done for an inclusive cost of £350,000! Yet, under the scheme of the late Lord Mayor's Committee, it is proposed to waste such a sum, which would lower this great institution containing 700 beds into the second rank of general hospitals; within a very few years becoming less and less useful to the citizens of London as an institution providing buildings for the treatment of acute cases of disease and accidents.

## WREN.

At the last meeting of the Leeds and Yorkshire Architectural Society, Mr. J. B. Mitchell Withers read a paper on Sir Christopher Wren. After describing the architectural and social condition of London in the years of Wren's youth, Mr. Withers spoke of the unique opportunity which the great fire of London presented to an architect of genius. In Evelyn's "Diary" we learned that the author submitted a plan for the improvement of London within two days of the extinction of the fire, but Wren had been before him. The scheme met with the King's approval, but unfortunately, and to the kingdom's loss, it was never adopted. Wren had previously been appointed assistant royal architect to make good the deficiences of the King's poetical official, and he then had occasion to report upon the old cathedral of St. Paul's, which had recently been repaired by Inigo Jones. A renewal of the fury of the flames, brought about by a big gale, resulted in the demolition of the old cathedral, and thus it was that Wren came to have the designing of the new edifice, though he did this in face of much hindrance and opposition on the part of the Commissioners of St. Paul's. One of Wren's foremost ideas was to leave the view of the high altar unobstructed from the western end of the cathedral, but this was prevented from being realized by the building of the organ at the entrance of the choir. It was also his desire to see the interior of the dome decorated with mosaics, yet the Commissioners instructed Sir John Thornhill to paint the inside. But perhaps the greatest annoyance which he suffered was in connection with the balustrade at the base of the dome, which the Commissioners urged as necessary, though Wren was sternly opposed to the idea.

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* It was Dance, architect of the Mansion House and Newgate. The architect of the outpatients' department was Philip Hardwick.—Ed. B.J.

# Electrical Notes.

### Enclosed Arc Lamps.

The recent litigation between the Jandus Arc Lamp Co. and Arc Lamps, Ltd., has given rise to a peculiar situation. The latter company have claimed throughout that their patents covered all clutch-feeding devices in connection with enclosed arc lamps, and so successful have they been in this contention that any number of firms are paying royalties to them for the enclosed arc lamps they make. In fact this has been effected without any fight and for the sake of peace. But Arc Lamps, Ltd., stood out, and many were the advertisements which appeared threatening purchasers of these lamps with prosecution by one side, and promising indemnification by the other side. Finally the action came on for trial, when, to the surprise of all, the plaintiffs asked for leave to amend their patents before proceeding any further. This leave was only granted on condition that they paid the costs, and that no more threats were issued in respect of alleged past infringements, and until the said amendments were effected. The firms who have paid royalties must now feel rather foolish.

### Electricity from Coal.

The "philosopher's stone" that scientists of the present age have been working for has been an electric cell in which coal is consumed by electro-chemical combustion instead of by heat combustion, in order to extract its energy by a more direct method than the steam engine and boiler. The latter system is of course extremely wasteful, requires a quantity of expensive plant, and arrives at its useful end in a roundabout way. In the largest plants 3lbs. of coal are required to produce one electrical horse-power, but it is said that a cell invented by a Mr. Jone, of Chicago, will do an equal amount of work with half a pound of coal. So-called "carbon cells" have been announced many times already, and nothing more has been heard of them; it is therefore only natural that scientists should be somewhat sceptical until the apparatus in question has been thoroughly proved. According to accounts to hand, a somewhat complicated process is involved, pure tin being reduced to stannous oxide and mercuric oxide to metallic mercury on opposite sides of a porous carbon pot, the electrolyte being caustic potash. The tin plate is the positive and a carbon electrode the negative element. The stannous oxide is reduced to the metallic state in a reverberatory furnace, whilst the mercury is drawn off, dissolved in nitric acid, and the mercuric nitrate is reconverted to mercuric oxide by the heat from the furnace, which also provides steam in the presence of air to treat the acid fumes for regenerating the nitric acid. As a result, nothing is lost or consumed except the coal in the furnace, which thus maintains a cycle of chemical operations. Strictly speaking, therefore, this is not quite what has generally been understood by a "carboncell," but it seems that the problem is being attacked in the right manner.

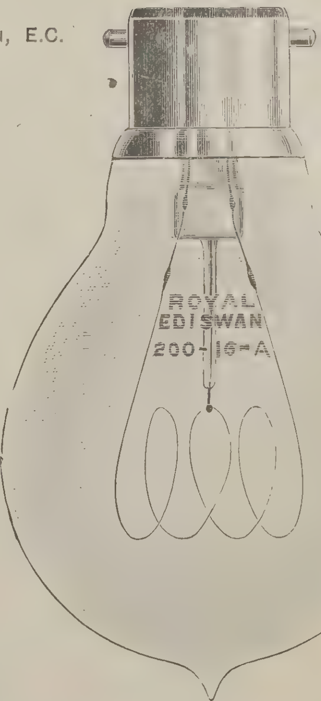
### The L.C.C. Contracts.

The agitation within and without the London County Council in connection with the awarding of its contracts for rails for use with the conduit trams has had a most beneficial result. The fact that the Council have to spend ratepayers' money certainly justifies their placing their orders in the cheapest market consistent with fairness to the home producer. But it has been a cause of complaint for a long time that the party at present in power attempt to run their free-trade and trade-unionist fads together in such a manner that the result is farcical to a degree. If the home manufacturer is to be bound to trade-union rules, then the foreigner should likewise be so restricted. But as it impossible to enforce such conditions abroad the awarding of contracts to foreign firms, whilst hedging British firms, cannot be too strongly denounced. Of course there were technical grounds for refusing the lowest tenders in the case in question, but no doubt the conditions were framed with one eye on the March elections and the other on the working man, who has suddenly become aware of the fact that he does not get so much employment as he might.

### The Uses of Bell Batteries.

All modern houses are fitted with electric bells; and stowed away in some obscure corner is a set of cells, which, whilst only intended for intermittent use, is employed in a manner which can hardly be thus termed. It would be interesting to calculate the actual length of time such batteries are in daily use: the percentage would be very small. There are, however, several other uses to which these cells may be put, all intermittent, but which are apparently unknown to the average householder. Firstly come burglar-alarms, which are perfectly easy to instal and only require a switch to be moved over on retiring for the night. Then there are the electric latch-releasers referred to last week; also bell-push telephones, described in a previous issue. Alarm clocks can also be connected up in the bell circuits, the clock being set in one room and actuating an electric bell in the servants' room: and of course thermostatic fire-alarms can be equally well connected to the same batteries.

A.M.I.E.E.



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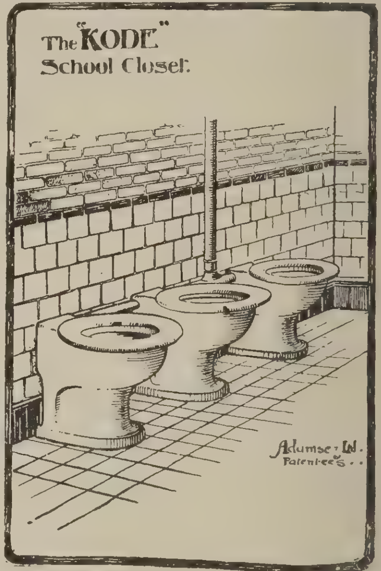

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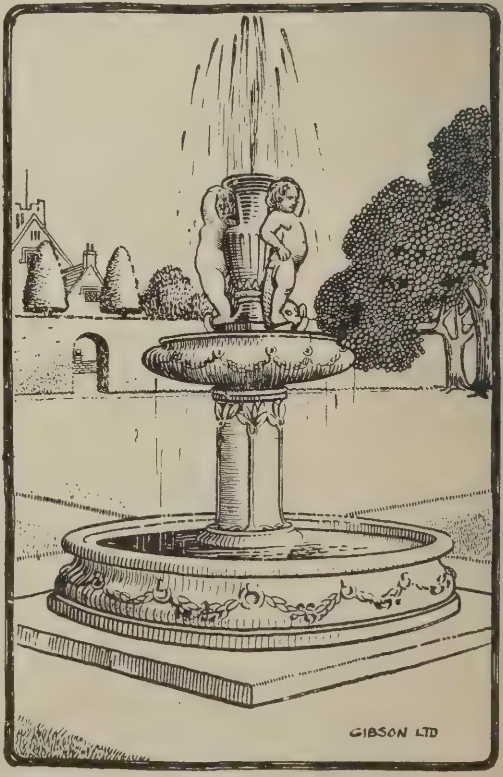

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# Tenders.

*Information from accredited sources should be sent to "The Editor" at latest by noon on Monday if intended for publication in the following Wednesday's issue. Results of Tenders cannot be accepted unless they contain the name of the Architect or Surveyor for the work.*

*Addressed postcards on which lists of tenders may be stated will be sent post free on application to the Manager,* BUILDERS' JOURNAL, 6, *Great New Street, Fetter Lane, E.C.*

**Limpsfield (Surrey).**—For additions and alterations to Stoneshill, Limpsfield, for Mr. F. O. Osmaston. Messrs. Wills & Anderson, architects, 4, Adam Street, Adelphi, London. Quantities by Messrs. J. Leaning & Sons, 28, John Street, Bedford Row, W.C. :—

| | |
|---|---|
| G. Wade | £3,886 |
| Maides & Harpur | 3,417 |
| H. Young | 3,014 |
| J. Brazier | 2,977 |
| Strange & Sons,* Tunbridge Wells | 2,926 |

[Surveyor's probable estimate, £2,975.]
* Accepted.

**London.**—For drainage and sanitary work at the Slade School, Plumstead Common Road, for the London School Board :—

| | | |
|---|---|---|
| J. & M. Patrick | £2,680 | 0 |
| F. Bull | 2,555 | 11 |
| J. Appleby & Sons | 2,460 | 0 |
| G. Parker | 2,425 | 0 |
| Lathey Brothers | 2,359 | 0 |
| J. & C. Bowyer | 2,319 | 0 |
| E. P. Bulled & Co. | 2,269 | 0 |
| F. & H. F. Higgs | 2,257 | 0 |
| W. Downs | 2,233 | 0 |
| H. Groves | 2,229 | 0 |
| T. D. Leng | 2,207 | 0 |
| Thomas & Edge | 2,160 | 0 |

* Recommended for acceptance.

**London, W.**—For the erection of a central free library in Brock Green Road, for the Hammersmith Borough Council. Mr. Henry T. Hare, F.R.I.B.A., architect, 13 Hart Street, Bloomsbury, W.C. :—

Main estimate.

| | | | |
|---|---|---|---|
| E. Tomkins | £14,023 | 0 | 0 |
| Jones Brothers | 13.172 | 0 | 0 |
| Weibking & Co. | 13,015 | 0 | 0 |
| W. J. Renshaw | 12.666 | 0 | 0 |
| J. McManus | 12,573 | 0 | 0 |
| Sabey & Son | 12,272 | 0 | 0 |
| Spiers & Son | 12 250 | 0 | 0 |
| Spencer, Santo & Co., Ltd. | 12.197 | 0 | 0 |
| H. & F. Fearman | 12,115 | 0 | 0 |
| E. H. Jackson | 12,075 | 0 | 0 |
| W. Downes | 11,937 | 0 | 0 |
| C. R. Gurr | 11,935 | 10 | 10 |
| Cowley & Drake | 11.931 | 0 | 0 |
| H. Lovatt | 11,900 | 0 | 0 |
| Lole & Lightfoot | 11,897 | 0 | 0 |
| Stimpson & Co. | 11,880 | 0 | 0 |
| G. Dowse | 11,875 | 0 | 0 |
| Foster Brothers | 11,778 | 0 | 0 |
| Lawrence & Son | 11,774 | 0 | 0 |
| B. E. Nightingale | 11,709 | 0 | 0 |
| Gaze & Sons | 11,665 | 0 | 0 |
| E. Wayland | 11,610 | 0 | 0 |
| Appleby & Sons | 11,586 | 0 | 0 |
| S. Polden | 11,585 | 0 | 0 |
| Patman & Fotheringham | 11,573 | 0 | 0 |
| Dorey & Co., Ltd. | 11,537 | 0 | 0 |
| Lorden & Son | 11,444 | 0 | 0 |
| J. Ferguson & Co. | 11,420 | 0 | 0 |
| Baker & Son | 11,417 | 0 | 0 |
| J. Shillitoe & Son | 11,400 | 0 | 0 |
| H. Willcock & Co. | 11,395 | 0 | 0 |
| G. H. Gibson | 11,379 | 0 | 0 |
| Todd & Newman | 11,357 | 0 | 0 |
| Moss & Co. | 11,350 | 0 | 0 |
| Richards & Co. | 11,297 | 0 | 0 |
| Sheffield Brothers | 11,257 | 0 | 0 |
| E. Wall | 11,256 | 0 | 0 |
| J. Parsons | 11,247 | 0 | 0 |
| W. Wallis | 11,190 | 0 | 0 |
| Wisdom Brothers | 11,120 | 0 | 0 |
| Wimpey & Co. | 11,119 | 0 | 0 |
| H. Kent | 10,999 | 0 | 0 |
| Dearing & Sons* | 10,597 | 0 | 0 |

* Accepted.

**London.**—For reversing stepping, &c., at Wilmot Street School, Bethnal Green, for the London School Board :—

If the work be carried out at Christmas.

| | |
|---|---|
| London School Furnishing Co. | £2,450 |
| Marchant & Hirst | 1,675 |
| F. & F. J. Wood | 1,647 |
| G. S S. Williams & Son | 1,588 |
| J. Grover & Son | 1,412 |
| W. Shurmur & Sons, Ltd. | 1,386 |
| A. E. Symes | 1,371 |
| McCormick & Sons | 1,323 |
| Stevens Brothers | 1,152 |

If carried out at Easter.

| | |
|---|---|
| London School Furniture Co. | £2,200 |
| Marchant & Hirst | 1,640 |
| F. & F. J. Wood | 1,625 |
| G. S. S. Williams & Son | 1,550 |
| J. Grover & Son | 1,412 |
| W. Shurmur & Sons, Ltd. | 1,334 |
| A. E. Symes | 1,321 |
| Stevens Brothers | 1,134 |

If carried out in July or August.

| | |
|---|---|
| London School Furniture Co. | £2,100 |
| F. & F. J. Wood | 1,625 |
| Marchant & Hirst | 1,610 |
| G. S. S. Williams & Son | 1,550 |
| J. Grover & Son | 1,412 |
| W. Shurmur & Sons, Ltd. | 1,334 |
| A. E. Symes | 1,321 |
| Stevens Brothers* | 1,134 |

* Recommended for acceptance.

**London, S.E.**—For a new branch library at Lower Sydenham, for the Lewisham Public Library Committee :—

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|---|---|
| T. G. Thaysington | £5,358 |
| Chessum & Sons | 4,991 |
| Roberts & Co. | 4,819 |
| C. North | 4,815 |
| Creaton & Co. | 4,775 |
| Godson & Sons | 4,690 |
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| Staines & Son | 4,593 |
| Smith & Sons | 4,591 |
| J. & C. Bowyer | 4,547 |
| Patman & Fotheringham | 4,523 |
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| Leney & Sons | 4,425 |
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| R. & E. Evans | 4,387 |
| J. Renwick | 4,386 |
| H. Heathfield | 4,383 |
| G. Parker | 4,345 |
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| Foster Brothers | 4,180 |
| C. Jackson | 4,141 |
| W. Wallis | 4,079 |
| Perry Brothers,* City Road | 4,027 |

* Accepted.

**Swindon.**—For the erection of a detached residence in Westlecott Road, for Mr. W. O. Hill. Messrs. William Drew & Sons, architects, Regent Circus, Swindon. Quantities by the architects :—

| | | | |
|---|---|---|---|
| J. Williams | £1,530 | 0 | 0 |
| Tydeman Brothers | 1,300 | 0 | 0 |
| A. J. Colborne | 1,264 | 0 | 0 |
| C. Hunt | 1,258 | 15 | 7 |
| J. G. Norman* | 1,250 | 1 | 3 |

* Accepted.

# Coming Events.

**Saturday, January 2.**
SANITARY INSPECTORS' ASSOCIATION.—President's New Year's Address at 6 p.m.

**Monday, January 4.**
ROYAL INSTITUTE OF BRITISH ARCHITECTS.—Business Meeting at 8 p.m.

**Wednesday, January 6.**
NORTHERN ARCHITECTURAL ASSOCIATION.—Students' Evening.

ARCHITECTURAL ASSOCIATION (Discussion Section and Camera and Cycling Club Joint Meeting).—Debate on "Sketching and Photography," at 7.30 p.m.

**Friday, January 8.**
ARCHITECTURAL ASSOCIATION.—Mr. Hugh Stannus, F.R.I.B.A., on "Egyptian Architecture," at 7.30 p.m.

BIRMINGHAM ARCHITECTURAL ASSOCIATION.—Mr. J. A. Gotch on "Domestic Architecture from the Conquest."

**Saturday, January 9.**
GLASGOW TECHNICAL COLLEGE SCIENTIFIC SOCIETY.—Alex. G. Strathern, M.I.M.E., on "The Manufacture of Weldless Chains," at 7.30 p.m.

**Monday, January 11.**
SURVEYORS' INSTITUTION.—Discussion on Mr. Herbert T. Scoble's paper on "Industrial Decentralization, an Important Factor in the Solution of the Housing Problem," at 8 p.m.

# Trade and Craft.

### Mellowes' Eclipse Glazing.

Messrs. Mellowes & Co., Ltd., of Corporation Street, Sheffield, send us an admirably printed booklet showing some of the numerous large roofs which have been glazed on their patent "Eclipse" system—such as the new roof on the centre transept of the Crystal Palace, the extensive new roofs on the railway stations at Carlisle, Blackpool, Nottingham, Cheadle Heath, Edinburgh, and the Great Central terminus at Marylebone; at many large electricity-generating stations throughout the country; and for the workshops of some of our leading manufacturers. The chief feature of the system is of course that no putty is employed, the glass being clamped between the bar and the cover, both of which are cased with tin-lead metal, so that rusting can never occur. It was no slight proof of the company's confidence in the permanence of their system that they agreed to keep the new roof at the Crystal Palace in perfect order for the next ten years at their own expense; more especially when it is stated that the old roof would have cost £800 a year to maintain in a watertight condition.

# Current Market Prices.

| | | £ | s. | d. | £ | s. | d. |
|---|---|---|---|---|---|---|---|
| **FORAGE.** | | | | | | | |
| Beans | per qr. | 1 | 14 | 0 | 2 | 0 | 0 |
| Clover, best | per load | 4 | 5 | 0 | 4 | 10 | 0 |
| Hay, good | do. | 3 | 12 | 6 | 4 | 0 | 0 |
| Sainfoin mixture | do. | 3 | 15 | 0 | 4 | 5 | 0 |
| Straw | do. | 1 | 10 | 0 | 2 | 0 | 0 |
| **OILS AND PAINTS.** | | | | | | | |
| Castor Oil, French | per cwt. | 1 | 0 | 5 | | — | |
| Colza Oil, English | do. | 1 | 3 | 6 | | — | |
| Copperas | per ton | 2 | 0 | 0 | | — | |
| Lard Oil | per cwt. | 2 | 15 | 0 | 2 | 17 | 0 |
| Lead, white, ground, carbonate | do. | 1 | 4 | 10 | | — | |
| Do. red | do. | 1 | 0 | $4\frac{1}{2}$ | | | |
| Linseed Oil, barrels | do. | 0 | 17 | $10\frac{1}{2}$ | | — | |
| Petroleum, American | per gal. | 0 | 0 | $7\frac{5}{8}$ | 0 | 0 | $7\frac{7}{8}$ |
| Do. Russian | do. | 0 | 0 | $5\frac{3}{4}$ | 0 | 0 | $7\frac{1}{8}$ |
| Pitch | per barrel | 0 | 8 | 0 | | — | |
| Shellac, orange | per cwt. | 11 | 10 | 0 | | — | |
| Soda, crystals | per ton | 3 | 2 | 6 | 3 | 5 | 0 |
| Tallow, Town | per cwt. | 1 | 7 | 6 | | — | |
| Tar, Stockholm | per barrel | 1 | 2 | 0 | | — | |
| Turpentine | per cwt. | 1 | 13 | $10\frac{1}{2}$ | | — | |
| **METALS.** | | | | | | | |
| Copper, sheet, strong | per ton | 71 | 0 | 0 | | — | |
| Iron, Staffs., bar | do. | 6 | 0 | 0 | 8 | 10 | 0 |
| Do. Galvanised Corrugated sheet | do. | 10 | 7 | 6 | 10 | 12 | 6 |
| Lead, pig, Soft Foreign | do. | 11 | 7 | 6 | | — | |
| Do. do. English common brands | do. | 11 | 15 | 0 | | — | |
| Do. sheet English 3lb. per sq. ft and upwards | do. | 14 | 0 | 0 | | — | |
| Do. pipe | do. | 15 | 0 | 0 | | — | |
| Nails, cut clasp, 3in. to 6in. | do. | 9 | 5 | 0 | | — | |
| Do. floor brads | do. | 9 | 0 | 0 | | — | |
| Steel, Staffs., Girders and Angles | do. | 5 | 10 | 0 | 6 | 5 | 0 |
| Do. do. Mild bars | do. | 6 | 0 | 0 | 6 | 5 | 0 |
| Tin, Foreign | do. | 125 | 17 | 6 | 126 | 7 | 6 |
| Do. English ingots | do. | 129 | 0 | 0 | 131 | 0 | 0 |
| Zinc, sheets, Silesian | do. | 23 | 12 | 6 | | — | |
| Do. do. Vielle Montaigne | do. | 23 | 10 | 0 | | — | |
| Do. Spelter | do. | 21 | 7 | 6 | 21 | 15 | 0 |
| **TIMBER.** | | | | | | | |
| SOFT WOODS. | | | | | | | |
| Fir, Dantzic and Memel | per load | 1 | 13 | 0 | 3 | 0 | 0 |
| Pine, Quebec, Yellow | do. | 5 | 5 | 0 | 6 | 5 | 0 |
| Do. Pitch | do. | 2 | 11 | 0 | 2 | 16 | 0 |
| Laths, log, Dantzic | per fath. | 4 | 10 | 0 | 5 | 10 | 0 |
| Do. Norrkoping | per bundle | 0 | 0 | $7\frac{3}{4}$ | | — | |
| Deals, St. Petersburg, White, 3rd, 2×5 to 3×11 | per stand. | 6 | 15 | 0 | | — | |
| Do. Kemi, Yellow, 1st and 2nd, 4×12 | do. | 12 | 0 | 0 | | — | |
| Do. do. do. do. 3×9 | do. | 9 | 10 | 0 | | — | |
| Do. do. do. 2nd, 3×9 | do. | 11 | 0 | 0 | | — | |
| Do. do. do. 3rd, 4×11 | do. | 6 | 5 | 0 | | — | |
| Do. do. do. do. 3×9 | do. | 8 | 0 | 0 | | — | |
| Do. Svoka, Yellow, 3rd, 3×9 | do. | 12 | 0 | 0 | | — | |
| Do. Archangel, Yellow, 2nd, 3×11 | do. | 17 | 10 | 0 | | — | |
| Do. do. do. 3rd, 3×9 | do. | 13 | 5 | 0 | | — | |
| Do. do. do. 4th, 3×9 | do. | 9 | 15 | 0 | | — | |
| Do. do. White, 1st, 3×9 | do. | 11 | 10 | 0 | | — | |
| Do. do. do. 2nd, 3×11 | do. | 10 | 15 | 0 | | — | |
| Do. do. do. 3rd, 3×11 | do. | 8 | 15 | 0 | | — | |
| Do. Uleaborg, Yellow, 1st & 2nd, 4×11 | do. | 11 | 0 | 0 | | — | |
| Do. Lovisa, Yellow, Unsorted, 3×9 | do. | 11 | 15 | 0 | | — | |
| Do. Lewisport, White, 1st, 3×9 | do. | 8 | 10 | 0 | | — | |
| Do. do. do. 2nd, 3×9 to 11 | do. | 8 | 0 | 0 | | — | |
| Do. do. do. 3rd, 3×10 to 11 | do. | 7 | 5 | 0 | | — | |
| Do. do. do. 4th, 3×8 & 7 to 3×11 to 12 | do. | 7 | 5 | 0 | | — | |
| Do. do. do. Unsorted, 3×7 to 3 × 10 to 12 | do. | 7 | 10 | 0 | | — | |
| Do. Tornas, Yellow, Unsorted, 3×8 | do. | 8 | 15 | 0 | | — | |
| Do. White Sea Yellow, 3rd, 3×9 | do. | 9 | 15 | 0 | | — | |
| Do. Fiume, White, 1st, 3×8 to 11 | do. | 8 | 0 | 0 | | — | |
| Do. Botwoodville, Bright Pine, 2nd, 3×8 to 10 | do. | 11 | 5 | 0 | | — | |
| Do. Libau, Yellow, 3×8 | do. | 8 | 0 | 0 | | — | |
| Do. do. White, 1st & 2nd, 3×9 to 11 | do. | 7 | 0 | 0 | | — | |
| Do. do. do. 3×9 | do. | 8 | 5 | 0 | | — | |
| Do. Quebec Spruce, White, Unsorted, 3×11 | do. | 9 | 0 | 0 | | — | |
| Battens, all kinds | do. | 6 | 10 | 0 | 21 | 15 | 0 |
| Flooring Boards 1in. prepared, 1st | per square | 0 | 9 | 6 | | — | |
| Do. 2nd | do. | 0 | 8 | 9 | | — | |
| Do. 3rd, &c. | do. | 0 | 6 | 6 | 0 | 9 | 0 |
| HARD WOODS. | | | | | | | |
| Ash, Quebec | per load | 3 | 12 | 6 | | — | |
| Birch, St. John, $3\frac{1}{2}$×8 to 15 | do. | 8 | 0 | 0 | | — | |
| Box, Turkey | per ton | 15 | 0 | 0 | 20 | 0 | 0 |
| Cedar, Cuba | per ft. sup. | 0 | 0 | $5\frac{1}{4}$ | | — | |
| Do. Honduras | do. | 0 | 0 | $4\frac{25}{32}$ | | — | |
| Do. Tobasco | do. | 0 | 0 | 3 | | — | |
| Elm, Quebec | per load | 4 | 2 | 6 | | — | |
| Mahogany, Average Price for Cargo, Honduras | per ft. sup. | 0 | 0 | $6\frac{1}{2}$ | | — | |
| Do. African | do. | 0 | 0 | $\frac{15}{16}$ | 0 | 0 | $3\frac{15}{32}$ |
| Do. St. Domingo | do. | 0 | 0 | $3\frac{29}{32}$ | | — | |
| Do. Cuba | do. | 0 | 0 | $5\frac{3}{32}$ | | — | |

# Complete List of Contracts Open.

| DATE OF DELIVERY. | WORK TO BE EXECUTED. | FOR WHOM. | FROM WHOM FORMS OF TENDERS MAY BE OBTAINED. |
|---|---|---|---|
| | **BUILDING:** | | |
| Dec. 31 | Fishguard—Kitchen and Laboratory | County School Governors | G. Morris, Clerk to Governors, High Street, Fishguard. |
| ,, 31 | Ashburton, Devon—Alterations, &c., to Lent Hall | R. Dawson | F. W. Vanstowe, Architect, Palace Chambers, Paignton. |
| ,, 31 | Stafford—Nurses' Home, &c | Guardians | H. T. Sandy, Architect, Stafford. |
| ,, 31 | Hillsborough, co. Down, Ireland—Two Villas | —— | H. Hobart, Architect, Dromore, co Down. |
| ,, 31 | Devonport—Buildings | Corporation | S. E. Stevenson, Engineer, Gas Works, Devonport. |
| ,, 31 | Barrow-in-Furness—School | Education Committee | Education Offices, Town Hall, Barrow in-Furness. |
| ,, 31 | Fartown, Yorks—Houses, &c. | —— | J. H. Hall, Architect, Fartown. |
| ,, 31 | Fittleworth, Sussex—Cottage | —— | W. Buck, Architect, North Street, Horsham. |
| ,, 31 | Hopeman, Elgin, Scotland—Additions to Offices | Parish Council | C. C. Doig, Architect, Elgin. |
| 1904. | | | |
| Jan. 1 | Londonderry—Six Houses | F. A. Guy | J. M. Robinson, 7 East Wall, Londonderry. |
| ,, 1 | Herne Bay, Kent—Coastguard Station | Admiralty | Director of Works Dept., Admiralty, 21 Northumberland Av., W.C. |
| ,, 1 | Pontardawe—Chapel | —— | G. P. Davies, Architect, Station Road, Port Talbot. |
| ,, 1 | Lynton—Church | —— | Rev. W. E. Cox, Lynton Rectory. |
| ,, 1 | Castlerock, Londonderry—Six Houses | F. A. Guy | J. M. Robinson, 7 East Wall, Londonderry. |
| ,, 1 | London, E.—Alterations to School | Mile End Guardians | J. M. Knight, 35 Bancroft Road, Mile End Road, London, E. |
| ,, 2 | Dublin—Laboratory and Lecture Theatre | —— | Training College, Marlborough Street, Dublin. |
| ,, 4 | Lurgan, Ireland—Free Library | Urban Council | F. W. Pollock, Clerk, Town Hall, Lurgan. |
| 4 | Neath—Roofs, Market Alterations, &c. | Corporation | D. M. Jenkins, Borough Engineer, Gwyn Hall, Neath. |
| ,, 4 | Hounslow—Public Offices, Baths and Library | Heston and Isleworth U.D.C. | N. Parr & A. E. Kates, Architects, Brunswick House, Brentford, W. |
| 4 | Newburn, Northumberland—Bridge Widening | Urban District Council | T. Gregory, Surveyor, Council Offices, Newburn. |
| ,, 4 | Tonypandy, Wales—Extension of Hall, &c. | —— | R. S. Griffiths, Architect, Excelsior Buildings, Tonypandy. |
| ,, 4 | Southampton—Schools | Corporation | Borough Engineer, 123 High Street, Southampton. |
| 4 | Gillingham, Kent—School | Borough Council Education Committee. | E. T. Atchison, 8 Waterloo Road, New Brompton, Gillingham. |
| ,, 4 | Nevin—Schoolroom | —— | O. M. Roberts & Son, Architects, Portmadoc. |
| ,, 5 | Poplar, E—Additional Bath and Lavatory Accommodation | —— | J. & W. Clarkson, 136 High Street, Poplar. |
| ,, 5 | Whitehaven—Church | —— | J. S. Moffat, 53 Church Street, Whitehaven. |
| ,, 5 | St. Austell, Cornwall—Goods Shed | Great Western Railway Co. | Engineer, Plymouth Station. |
| ,, 5 | Queensbury, Yorks—Chapel, &c. | Urban District Council | T. H. & F. Healey, Architects, Bradford. |
| ,, 5 | Penistone, Sheffield—Hospital | Isolation Hospital Committee | G. A. Wilde, 9 Bank Street, Sheffield. |
| ,, 5 | Denbury, Newton Abbot—Repairs to Inn | —— | Rendell & Symons, Market Street, Newton Abbot |
| ,, 5 | Gillingham, Kent—School | Borough Council Educational Committee. | E. T. Atchison, 8 Waterloo Road, New Brompton, Gillingham. |
| ,, 5 | Hayle, Cornwall—Stable, &c. | Great Western Railway Co. | Engineer, Plymouth Station. |
| 6 | Leytonstone, N.E.—Lunatic Wards | West Ham Guardians | F. E. Hilleary, Clerk, Union Workhouse, Leytonstone, N.E. |
| ,, 6 | Wardle, Lancs—Wall, &c. | Urban District Council | T. Burrows, Surveyor, Council Offices, Wardle. |
| ,, 7 | London, S.E.—Labour Room, &c. | Guardians | G. D. Stevenson, 13 and 14 King Street, Cheapside, E.C. |
| ,, 9 | Kirkcaldy, Scotland—Extension of Shed | Corporation | W. L Macindoe, Town Clerk, Kirkcaldy. |
| ,, 9 | Columbkille, Ireland—Church Repair and Alteration | —— | Vicarage, Gowna, co. Cavan |
| ,, 11 | East Ham—Library | Urban District Council | A. H. Campbell, Engineer, Town Hall, East Ham. |
| ,, 11 | Bury St. Edmunds—Alterations to Police Station | Standing Joint Committee | A. A. Hunt, 51 Abbeygate Street, Bury St. Edmunds. |
| No date | Gorton—Corrugated Iron School | Urban District Council | C. T. Singer, Clerk, Town Hall, Gorton. |
| | **ENGINEERING:** | | |
| Dec. 31 | Epsom—Pumping Plant | Urban District Council | E. R. Capon, Bromley Hurst, Church Street, Epsom. |
| ,, 31 | Rotherham—Lift | Sewerage Works Committee | R. E. W. Berrington, Engineer, Bank Buildings, Wolverhampton. |
| ,, 31 | Hadleigh, Suffolk—Borehole | Urban District Council | T. F. Corder, Surveyor, High Street, Hadleigh. |
| ,, 31 | Rotherham—Bacteriological Filters | Sewerage Works Committee | R. E. W. Berrington, Engineer, Bank Buildings, Wolverhampton. |
| ,, 31 | Belfast—Mortar Plant | Public Health Committee | Assistant City Surveyor, Town Hall, Belfast. |
| 1904. | | | |
| Jan. 1 | Cheshunt—Filtering Tank and Sludge Beds | Urban District Council | A. C. Lee, Clerk, Manor House, Chesham. |
| ,, 1 | Long Eaton—Electric Plant | Urban District Council | F. Worrall, Engineer, Electricity Supply Works, Long Eaton. |
| ,, 4 | Dublin—Bridges | Gt. Northern Rly. Co. (Ireland) | W. H. Mills, Engineer-in-Chief, Amiens Street, Dublin. |
| ,, 4 | London, N.E.—Mains | Hackney Borough Council | R. Hammond, 64 Victoria Street, Westminster, S.W. |
| ,, 4 | Buntingford, Herts—Well | Rural District Council | J. Chadwick, Engineer, Bletchley, Bucks. |
| ,, 4 | Pontypridd—Bridge Works | Urban District Council | P. R. A. Willoughby, Engineer, Council Offices, Pontypridd. |
| ,, 4 | Norwich—Plating | Corporation | A. E. Collins, City Engineer, Guildhall, Norwich. |
| ,, 5 | Copenhagen—Pumps | Corporation | Elektrisk Station, Gothersgade, 30 Copenhagen K. |
| ,, 6 | St. Monans, Scotland—Harbour Works | —— | D. & C. Stevenson, 84 George Street, Edinburgh. |
| ,, 6 | Aberdeen—Timber Wharf, &c. | Harbour Commissioners | R. G. Nichol, Engineer, Aberdeen. |
| ,, 7 | Bo'ness, Scotland—Electric Lighting | Town Council | Mr. Liddle, 28 Rutland Street, Edinburgh. |
| ,, 8 | Calcutta—Disc Water Meters | Corporation | Assistant Engineer, Corporation Water Works, 3 Municipal Office Street, Calcutta. |
| ,, 8 | Carshalton, Surrey—Hot-water Apparatus | Metropolitan Asylums Board | T. D. Mann, Clerk, Board's Offices, Embankment, E.C. |
| ,, 9 | Kettering—Electricity Meters | Urban District Council | Kennedy & Jenkin, 17 Victoria Street, Westminster, S.W. |
| ,, 11 | Manchester—Laying Telephones | Paving, Sewering and Highways Committee. | City Surveyor, Town Hall, Manchester. |
| ,, 11 | Clay Cross, near Chesterfield—Well Sinking | Urban District Council | W. H. Radford, Albion Chambers, King Street, Nottingham. |
| ,, 11 | Clay Cross, near Chesterfield—Pipe Laying | Urban District Council | W. H. Radford, Albion Chambers, King Street, Nottingham. |
| ,, 11 | Clay Cross, near Chesterfield—Borehole | Urban District Council | W. H. Radford, Albion Chambers, King Street, Nottingham. |
| ,, 11 | Greyrig and Limerig, Scotland—Reservoirs | Eastern District Committee | Warren & Stuart, 94, Hope Street, Glasgow. |
| ,, 11 | Clacton-on-Sea—Gasmeters | Urban District Council | S. Francis, Engineer, Town Hall, Clacton-on-Sea. |
| ,, 11 | London, S.E.—Repairing front of Wharf | Metropolitan Asylums Board | Secretary, Metropolitan Asylums Board, Embankment, E.C. |
| | **FURNITURE:** | | |
| Jan. 6 | Edinburgh—Furnishings | —— | R. Morham, City Architect, Public Works Office, City Chambers Edinburgh. |
| ,, 7 | Chatham—Furnishing, &c. | Joint Hospital Board | H. P. Mann, 44, High Street, Chatham. |
| | **IRON AND STEEL:** | | |
| Jan. 4 | Gravesend—Water Main | Town Council | C. F. McInnes, Electricity Works, Gravesend. |
| ,, 5 | India Office, S.W.—Spans | —— | Director General of Stores, India Office, Whitehall, S.W. |
| ,, 5 | King's Lynn—Stores | Corporation | H. J. Weaver Borough Engineer, Town Hall, King's Lynn. |
| ,, 5 | Bury, Lancs—Iron Castings | Joint Water Board | R. B. Rigby, Waterworks Manager, Parsons Lane, Bury. |
| ,, 7 | Earlsheaton, Dewsbury—Pipes | Soothill Nether U.D.C. | J. H. Ward, Surveyor, Earlsheaton, Dewsbury. |
| ,, 11 | Clay Cross, near Chesterfield—Pipes | Urban District Council | W. H. Radford, Albion Chambers King Street, Nottingham. |
| ,, 11 | London, S.W.—Iron Bars, &c. | Wandsworth Borough Council | H. G. Hills, Town Clerk, Council House, Wandsworth, S.W. |
| | **PAINTING AND PLUMBING:** | | |
| Jan. 11 | London, S.W.—Painter's Materials | Wandsworth Borough Council | H. G. Hills, Town Clerk, Council House, Wandsworth. |
| | **ROADS AND CARTAGE:** | | |
| Dec. 31 | Hunstanton—Making-up, &c. | Urban District Council | J. C. Walker, Surveyor, Council Offices, New Hunstanton. |
| ,, 31 | Horsham, Sussex—Materials | Roads and Bridges Committee | W. McIntosh, County Surveyor, Worthing Road, Horsham. |
| ,, 31 | London, S.E.—Private Street Works | Penge U.D.C. | H. W. Longdin, Surveyor, Town Hall, Anerley, S.E. |
| 1904. | | | |
| Jan. 1 | Wealdstone—Private Street Improvements | Urban District Council | H. Walker, Surveyor, Council Offices, Wealdstone. |
| ,, 1 | Kelloe, Durham—Forming, &c., Streets | Coxhoe Parish Council | M. H. Seymour, Clerk, Main Street, Kelloe. |
| ,, 1 | Jersey—Wood-paving | Council | H. Le Masurier, Town Hall, Jersey. |
| ,, 1 | Brighton—Granite Kerb, &c. | Town Council | F. J. C. May, Surveyor, Town Hall, Brighton. |
| ,, 1 | Slough—Materials | Urban District Council | W. W. Cooper, Surveyor, Town Hall, Slough. |
| ,, 2 | Whitley, Northumberland—Paving, &c. | Urban District Council | J. Moore, Surveyor, Council Buildings, Whitley Bay. |
| ,, 4 | Warrington—Forming, &c. | Paving and Sewerage Committee | Borough Surveyor, Town Hall, Warrington. |
| ,, 4 | Carmarthen—Broken Granite, &c. | County Council | C. H. Mounsey, County Surveyor, Carmarthen. |
| ,, 4 | Broadstairs—Granite | Urban District Council | H. Hurd, Town Surveyor, Council Offices, Broadstairs. |
| ,, 4 | Pontypridd—Street Works, &c. | Urban District Council | P. R. A. Willoughby, Surveyor, Town Hall, Pontypridd. |
| ,, 4 | Swansea—Repairing, &c., Pavements | Rural District Council | E. Harris, Clerk, Alexandra Road, Swansea. |
| ,, 5 | Harpenden, Herts—Roads | Urban District Council | Surveyor, Public Hall Harpenden. |
| ,, 5 | Salford—Paving | Corporation | Borough Engineer, Town Hall, Salford. |
| ,, 7 | Featherstone, Yorks—Kerb, &c. | Urban District Council | F. B. Rothera, Council Offices Featherstone. |
| ,, 11 | London, S.W.—York Paving and Granite Kerb | Wandsworth Borough Council | H. G. Hills, Town Clerk, Council House Wandsworth, S.W. |
| ,, 11 | Dartford—Making-up Private Streets | Rural District Council | W. Harston, 8 Hythe Street, Dartford. |

## Complete List of Contracts Open *continued*

| DATE OF DELIVERY. | WORK TO BE EXECUTED. | FOR WHOM. | FROM WHOM FORMS OF TENDERS MAY BE OBTAINED. |
|---|---|---|---|
| | **SANITARY:** | | |
| Dec. 31 | Lindfield, Sussex—Sewer | Cupfield R.D.C. | Mr. Beach, Surveyor, Council Offices, Hayward's Heath. |
| " 31 | Bexley Heath, Kent—Sewers, &c. | Urban District Council | W. J. Lomax, 11 Fold Street, Bolton. |
| 1904. | | | |
| Jan. 1 | Walmer, Kent—Sewerage Works | Urban District Council | Beesley, Son & Nichols, 11 Victoria Street, Westminster, S.W. |
| " 1 | Cheshunt, Middlesex—Sewage-disposal Works | Urban District Council | Clerk, Council Offices, Manor House, Cheshunt. |
| " 2 | Burton-upon-Trent—Sewerage Works | Corporation | G. T. Lynam, Borough Engineer, Town Hall, Burton-upon-Trent. |
| " 4 | Coalville, Leics—Sewers, &c. | Urban District Council | J. B. Everard 6 Millston Lane, Leicester. |
| " 4 | Middlesbrough—Sewer | Sanitary Committee | F. Baker, Borough Engineer, Municipal Buildings, Middlesbrough. |
| " 4 | Wicklow, Ireland—Sewers, &c. | Urban District Council | J. Pansing, Surveyor, Church Hill, Wicklow |
| " 5 | Bexton, near Knutsford—Sewer, &c. | Bucklow R.D.C. | J. M. D. M'Kenzie, 7 Market Street, Altrincham |
| " 5 | King's Lynn—Stoneware Pipes, Disinfectants, &s. | Corporation | H. J. Weaver, Borough Surveyor, Town Hall, King's Lynn. |
| " 5 | Merthyr Tydfil—Stoneware Pipes, &c. | Urban District Council | Surveyor, Town Hall, Merthyr Tydfil. |
| " 5 | Queensbury, Yorks—Sewers, &c. | Urban District Council | J. Drake & Son, Queensbury, near Bradford. |
| " 5 | Leyton, Essex—Sewer, &c. | Urban District Council | W. Dawson, Engineer, Town Hall, Leyton. |
| " 5 | Brighton—Renewing Sanitary Appliances | Guardians | H. S. Read, Parochial Offices, Princes Street Brighton. |
| " 6 | Bedlington, Northumberland—Sewerage Works, &c. | Urban District Council | J. E Johnston, Surveyor, Bedlington. |
| " 7 | Uxbridge—Extensions of Sewers | Rural District Council | J. F. Stow, Surveyor, Corn Exchange, Uxbridge. |
| " 9 | Tunbridge Wells—Sewer, &c. | Corporation | J. Cave, 10 Calverley Parade, Tunbridge Wells. |
| " 11 | London, S.W.—Stoneware Pipes, &c. | Wandsworth Borough Council | H. G. Hills, Town Clerk, Council House Wandsworth, S.W. |
| " 11 | Hambledon, Guildford—Scavenging | Rural District Council | F. Smallpiece, 138 High Street, Guildford. |
| " 13 | Tooting, S.W.—Drainage Works | Metropolitan Asylums Board | A. & C. Harston, 15 Leadenhall Street, E.C. |
| " 19 | London, S.E.—Stoneware Drain Pipes, &c. | Camberwell Borough Council | W. Oxtoby, Borough Engineer, Town Hall, Camberwell, S.E. |
| " 19 | Bolton—Emptying Ashpits (Two Contracts) | Corporation | Town Clerk, Town Hall, Bolton. |
| | **TIMBER:** | | |
| 1904. | | | |
| Jan. 5 | King's Lynn—Timber | Corporation | H. J. Weaver, Borough Surveyor, Town Hall, King's Lynn. |
| " 11 | London, S.W.—Timber | Wandsworth Borough Council | H. G. Hills, Town Clerk, Council House, Wandsworth, S.W. |
| " 15 | Cape Town—Timber | Government Rly. Department | Railway Stores, Cape Town. |
| " 18 | London, S.E.—Timber | Camberwell Borough Council | W Oxtoby, Borough Engineer, Town Hall, Camberwell, S.E. |

## List of Competitions Open.

| DATE OF DELIVERY. | DESIGNS REQUIRED. | AMOUNT OF PREMIUM. | DEPOSIT REQUIRED FOR CONDITIONS, &c. | BY WHOM ADVERTISED. |
|---|---|---|---|---|
| 1904 | | | | |
| Jan. 15 | Windsor—Police and Fire Brigade Stations | £26 5s. | £1. | E. A. Stickland, Borough Surveyor, Town Council Offices, Windsor. |
| " 20 | Wakefield—Public Library | —— | —— | C. J. Hudson, Town Clerk, Town Hall, Wakefield. |
| " 31 | Borstal, Rochester—Chancel, Organ Chamber, &c. | —— | —— | —— Borstal Vicarage, Rochester. |
| Feb. 1 | Ilkley—Free Library &c. | £100, £50, £20. | £1 1s. | F. Hall, Clerk, Council Offices, Ilkley. |
| " 1 | Erdington—New Council House & Free Library | £50, £30, £20. | £1 1s. | H. H. Humphries, District Engineer, Public Hall, Erdington, Birmingham. |
| " 1 | Sevenoaks—Public Library | —— | —— | H. J. Thompson, Clerk, Council Offices, Argyle Road, Sevenoaks. |
| Mar. 31 | Vienna—Machinery to Lift Boats on Canal | 100,000, 75,000 & 50,000 kronen. | —— | Austro-Hungarian Consulate-General, 22 Laurence Pountney Lane, E.C. |
| No date | Torquay—Public Library | £52 10s., £31 10s. | —— | F. S. Hex, Town Clerk, Town Hall, Torquay. |

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